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POPULATION STRATEGY IN ASIA



THE SECOND ASIAN POPULATION
CONFERENCE, TOKYO, NOVEMBER 1972

REPORT, DECLARATION AND
SELECTED PAPERS

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FOREWORD

The Second Asian Population Conference which took place in Tokyo in November 1972, was a landmark in the growing awareness of population problems, in that it was a meeting of representatives of countries which together account for just over half of the world's population at a time when the demographic situation in the world as a whole has become a matter of concern. These twenty-three countries adopted a "Declaration of Population Strategy for Development" and recommendations which stand as a programme of action broad in scope, ranging from labour utilization to land reform, from pollution to planning mechanisms, from contraceptives to construction. Central to the declaration and the recommendations is the emphasis that the so-called "population problem" is not an isolated one. It is part of a complex of economic and social problems, requiring a wide range of policies which will have to be arrived at by a combined national and international effort.

In this World Population Year 1974, I commend this publication to the attention of all those whose work, and whose hopes, are directed towards meeting the challenge that world population problems present to us all.

Bangkok
June 1974

J.B.P. Maramis
Executive Secretary

"INTRODUCTION"

The preparations for the Second Asian Population Conference in Tokyo could be said to have spanned nine years, beginning at the First Asian Population Conference held in New Delhi in 1963. The continuity of population study and action in the region is shown by the large group of those who attended the Delhi conference and who returned to Tokyo to take up the discussions and render an account of the intervening years.

The groundwork of the first conference was well laid. Much of the discussion and the recommendations was far-sighted — we realise this the more when we recall that, in 1963, the implications of high population growth rates were recognised by only a few Governments. Only five administrations in the region then had official population policies; but by 1972, their members had increased to fifteen and another ten were actively supporting family planning programmes. In the same period, the total population of the region had risen from 1,700 million to 2,100 million.

At the time of the First Asian Population Conference, problems of food supply as measured against population growth were already regarded as crucial. In the succeeding nine years, the problems were seen to have increased in width and depth; they now engaged such areas as the growing volume of unemployment, the lag in provision of education and health services, the widening of the gap between rich and poor. There have since opened up whole new areas of thought and research and action, which not long ago would not have been regarded as part of "population studies" — psychology, law, sociology and geography, for example. Population studies are no longer the prerogative of the economist, the statistician and the doctor.

The accelerating urbanization of peoples — not only in Asia but in the whole of the developing world — and the dangers of ecological imbalance, are also becoming important aspects of population studies, engaging the quality and the distribution of populations as well as their quantity. New technologies have emerged in many fields since 1963. The “green revolution” (a phrase which post-dates the First Asian Population Conference) has been ushered in, though not without its problems of logistics and sociologics. Much work has been done on the implementation of family planning programmes (in which Asian countries have led the way), an area of government action of which few had experience only nine years before. In the same interval, there have appeared the first hesitant beginnings of “intermediate technologies” in industry, designed to moderate the social and economic threat from massive increases in the labour forces in the developing countries.

Thus the world has moved on, and at an accelerating rate of change, since 1963. One country in Asia — Japan — has indeed passed through the “demographic transition” in that time, with birth and death rates more in balance at lower levels. In some other countries of the region, fertility has declined quite swiftly; a marked reduction in population growth rates in Hong Kong, Malaysia, the Republic of Korea, Singapore and Sri Lanka have been noted since the 1963 Conference.

But the most significant change has been that nearly all the countries of Asia now have announced official population programmes, and most of them have instituted population measures; some, like Indonesia, are moving fast to make up for lost time. At the 1972 Conference, there was therefore a gathering of more experience, from more countries, than ever before.

The organization of an international conference to deal with such pressing and wide-ranging problems was no light task. The staff of the Economic Commission for Asia and the Far East began intensive preparations for it twenty months before the planned date; in this they were able to call on the co-operation and the expertise of the Governments of the member and associate member countries, of many specialized agencies in the United Nations family, and of other bodies. Special acknowledgements go to the host country, Japan, whose hospitality and arrangements were praised by every participant.

The main weight of planning responsibility fell on the Preparatory Committee which held meetings in June 1970, May 1971 and October 1972, to direct and implement the purposes, agenda, invitations, time-table, discussion structure, background papers and invited contributions, pre-conference documentation included the holding of three seminars to present detailed team-work reports to the Conference — the three topics chosen being the interrelation between population and manpower problems, the ecological implications of rural and urban population growth, and population aspects of social development.

The conference organizers were also able to take advantage of the holding of three other meetings which produced valuable material for the Conference — an expert group meeting on the socio-economic returns of family planning programmes, a symposium on labour and manpower problems. and an expert

group meeting on the role of voluntary organizations in family planning programmes.

Twenty-one ECAFE countries were represented at the Conference: Australia, France, Hong Kong, India, Indonesia, Iran, Japan, the Khmer Republic, the Republic of Korea, Laos, Malaysia, Nepal, the Netherlands, New Zealand, the Philippines, the Republic of Vietnam, Sri Lanka, Thailand, the Union of Soviet Socialist Republics, the United Kingdom and the United States of America. Also represented were the Governments of the Federal Republic of Germany and Sweden. The Report and the Declaration of Population Strategy for Development which follow were adopted by consensus.

I REPORT OF THE CONFERENCE

I. ORGANIZATION

The Second Asian Population Conference was held in Tokyo, from 1 to 13 November 1972. It was sponsored by ECAFE with host facilities generously offered by the Government of Japan and supplementary funds from the United Nations Fund for Population Activities (UNFPA).

The Conference was held in compliance with Commission resolution 74 (XXIII) of 17 April 1967 whereby it was decided "to establish the Asian Population Conference as a statutory organ of the Commission, to be convened every ten years synchronizing with the decennial population and related censuses, for the consideration of all aspects of population questions and of their impact on economic and social development."

A preparatory committee, set up to assist the ECAFE secretariat in organizing the Conference, met at Bangkok from 10 to 13 June 1970 and again from 18 to 20 May 1971. Its third and final meeting was held in Tokyo from 29 to 30 October 1972.

Purpose of the Conference

The Conference aimed to provide a better understanding of the central role of population in the achievement of development goals and to assist Governments in the region in determining and applying the most effective means of influencing population trends and patterns in order to hasten the attainment of goals of the Second United Nations Development Decade. It was to concentrate upon the implications of policies and action programmes and the related problems of implementation as revealed by present knowledge rather than upon the precise measurement of current population trends. Such emphasis, while not minimizing the importance of improving demographic, economic and social statistics, would imply recognition of the important fact that Governments had to prepare and implement policies for the Second Development Decade on the basis of available knowledge rather than on the desideratum of perfect knowledge.

Participation

The Conference was attended by the following member and associate member countries of the Commission: Australia, France, Hong Kong, India, Indonesia, Iran, Japan, the Khmer Republic, Laos, Malaysia, Nepal, the Netherlands, New Zealand, the Philippines, the Republic of Korea, the Republic of Viet-Nam, Sri Lanka, Thailand, the Union of Soviet Socialist Republics, the United Kingdom and the United States of America. The Governments of the Federal Republic of Germany and Sweden were also represented.

The Secretary-General was represented by Mrs. Helvi Sipila, Assistant Secretary-General for Social and Humanitarian Affairs, and the following specialized agencies and other United Nations bodies were represented: International Labour Organisation (ILO), Food and Agriculture Organization of the United Nations (FAO), United Nations Educational, Scientific and Cultural

Organization (UNESCO), World Health Organization (WHO), International Bank for Reconstruction and Development (IBRD), Economic Commission for Europe (ECE), United Nations Development Programme (UNDP) and United Nations Fund for Population Activities (UNFPA).

The following intergovernmental organizations were represented: Asian Development Bank, the Colombo Plan Bureau and Inter-Governmental Co-ordinating Committee for South-East Asia of Regional Co-operation in Family and Population Planning (IGCC), as were the following non-governmental organizations: International Conference of Catholic Charities, International Chamber of Commerce (ICC), International Council on Social Welfare (ICSW), International Federation of Home Economics, International Federation of Social Workers, International Planned Parenthood Federation (IPPF), Population Council and World Union of Catholic Women's Organizations. Twelve persons attended as guests of the ECAFE secretariat and thirty-eight experts in demography and related disciplines were appointed as resource persons to assist in the proceedings of the Conference.

Opening addresses

His Excellency, the Vice Prime Minister of Japan, Mr. Takeo Miki, inaugurated the Conference on 1 November 1972 at 10.00 a.m. In his inaugural address, he compared the growth of the region's population with that of the population of the world and stressed that the focal point of the world population problem was Asia. He expressed the hope that the 1970s would be for Asia an age of action closely tied to policy and that the Second Asian Population Conference would provide momentum for the attainment of the objectives of the Second United Nations Development Decade. In collaboration with other countries, Japan would continue its positive co-operation in the solution of population problems through various means, such as bilateral assistance and contributions to the various international organizations.

U Nyun, Executive Secretary of ECAFE, citing the dynamic leadership which Japan had shown in the field of economic development, both nationally and internationally, said that the ability of the Japanese people to achieve a rapid decline in fertility had demonstrated that that could be done successfully outside the Western economic, social and cultural setting. The major task of the Conference was to utilize current knowledge to look at the future in terms of projected demographic trends and population change; their implications for economic and social development; the need for plans and programmes to take into account the interrelatedness of economic, social and demographic factors; and the contribution that regional co-operation and mutual effort could make to national development planning. Emphasizing the need for guidelines that placed the couple and the family at the centre of all economic, social and demographic plans and actions for the years and decades ahead, he expressed the hope that the work of the Conference would lead to innovative programmes and new perspectives.

Mr. Rafael Salas, Executive Director of UNFPA, pledged his organization's support in developing a truly integrated approach to the problems of poverty,

environment and population. Although the difficulties in engineering a decline in fertility had perhaps been underestimated, the implications must be accepted and appropriate programmes formulated if the goal of family planning was rapid fertility reduction. One of UNFPA's first priorities was to support family planning programmes by giving priority attention to their most important aspects.

Mrs. Helvi Sipila, United Nations Assistant Secretary-General for Social and Humanitarian Affairs, reporting on the post she had recently assumed, drew attention to the role of population policies in efforts to achieve social development, to promote equality between men and women and to discourage crime.

Mr. Antonio Carrillo-Flores, Secretary-General of the United Nations World Population Conference, stated that the Conference was an important one, both in its own right and as an important step paving the way for the World Population Conference in 1974. He drew attention to the relationship between individual family goals and national population policies.

A vote of thanks to the Government of Japan for its preparations for the Conference was proposed by India and seconded by Thailand, Iran, Malaysia, the United States and the Soviet Union.

In a brief ceremony, the Conference stood in silent tribute to the late Mr. Minoru Tachi, Director of the Institute of Population Problems of Japan and Vice-Chairman of the Preparatory Committee for the Conference. The late Mr. Tachi's contribution to the work of the United Nations, to world demography, to Asian demography and to Japanese demography were cited by various participants.

Ambassador Koh Chiba, Adviser to the Ministry of Foreign Affairs of Japan, was elected Chairman of the Conference. In accepting the chairmanship, Mr. Chiba averred that the population problem was of concern to all countries in the ECAFE region and that what the Conference was about to do would have vital consequences not only in the region but throughout the world.

Three Vice-Chairmen were elected by acclamation: Mr. Uma Shankar Dikshit, the Union Minister of Health and Family Planning of India; Dr. A.M. Sardari, Under-Secretary, Ministry of Health of Iran; and Mrs. Siva Obeysekera, Deputy Minister of Health of the Republic of Sri Lanka. Unanimously elected as Rapporteur was Mr. K.W.J. Topley, Commissioner for Census and Statistics of Hong Kong.

Agenda

The Conference adopted the following agenda:

1. Opening of the Conference
2. Election of officers
3. National statements
4. Demographic situation in relation to factors affecting population change
5. Manpower and employment in the context of economic development
6. Implications of population growth for agricultural and industrial develop-

ment

7. Social aspects of the development of human resources
8. Family planning programmes
9. Ecological implications of rural and urban population change and of population transfers for development planning
10. Research and training, and the dissemination of information and knowledge on population matters
11. Review of and prospects for international co-operation in population policies and programmes
12. Adoption of the report of the Conference
13. Closure of the Conference

Programme of the Conference

Every topic but the last one was covered by (a) an introductory plenary session, (b) two simultaneous working group sessions, and (c) a final plenary session.

A number of representatives submitted to the Conference written or oral statements on the demographic situation in their respective countries.

Adoption of the report

The draft report was considered by a drafting committee and adopted by the Conference at its final plenary meeting on 13 November 1972.

II. DEMOGRAPHIC SITUATION IN RELATION TO FACTORS AFFECTING POPULATION CHANGE

Since the First Asian Population Conference, held in 1963, there had been considerable progress in family planning programmes; they had had marked success in securing acceptors, but their precise influence in lowering fertility awaited measurement. An evaluation of that impact would have to take into consideration the extent to which declines in fertility occurred as responses to changes in such socio-economic factors as *per capita* income, proportion employed in non-agricultural industries, educational levels and the roles of women. The level of fertility was one of the most sensitive responses emerging from the interaction of the various elements which made up the corpus of demographic, social and economic factors. Given the magnitude of the population problem, the need for incisive studies was crucial. A prerequisite for such studies was the availability of relevant and reliable statistics.

The Conference's basic approach could perhaps be summarized in a single question: What was the role of the population factor in the whole development process? In relation to that question, the following points were made by keynote speakers:

- (a) Human needs and aspirations could be met only through plans and actions that were essentially unified in character.
- (b) National family planning programmes should tend to become an integrated part of national economic and social plans and policies, all viewed as mutually supporting.
- (c) The obstacles to development lie, not merely in the rate of population growth, but also in such factors as insufficient attention to agriculture, rigid social structures, imbalances in resource allocation both as between rich and poor countries and within countries themselves.
- (d) Governments and other institutions should develop a conceptual framework for an integrated approach to the problems of poverty, environment and population, and should formulate and implement comprehensive development strategies.

More recently the conditions created by the rapid growth of population had forced the countries of the region to recognize that changes in the size, growth, distribution and composition of the population had a concomitant relation to all aspects of economic and social development, and that fertility, mortality and migration were key intervening variables.

But, the countries were still at the incipient stage of translating that recognition into operational plans and actions. One major reason was the complexity of the relation and the lack of scientific understanding. Another was the lack of appropriate reliable data. Since it was a new area of concern, appropriate

approaches and methodologies would have to be developed if there were to be effective solutions to the problems of imbalance between population growth and economic and social development.

Demographic situation

Rapid population increase, a principal characteristic of the world's developing regions, challenged and in large part nullified the efforts to achieve economic and social betterment. A graphic illustration of the speed and magnitude of that increase was provided by a chart giving the trend and projection of population growth for the twentieth century (figure 1). In population size, the less developed countries had exceeded the more developed by about 525 million at the beginning of the century and by about 770 million at mid-century. Twenty years later, in 1970, there had been about 1,500 million more inhabitants of the less developed than of the more developed regions of the world. That difference was likely to increase; by the end of the century, projects indicated that the less developed world, with more than 5,000 million, would have about three and a half times more people than the more developed.

In a second chart, magnitudes of increase were compared for the period 1900-1920, 1940-1950, 1960-1970 and ten-year periods thereafter projected until 1990-2000 for the two major regions of the world (figure 2). For the period 1900-1920 the absolute net increase in the more developed regions had been greater than in the less developed regions. That position had been reversed by the end of the 1920s. The net increase for the first development decade in the less developed regions had been five times the growth in the more developed regions. If those trends were to continue, the net additions to the population of the less developed regions in the last decade of the century would be eight times the net growth of the more developed regions.

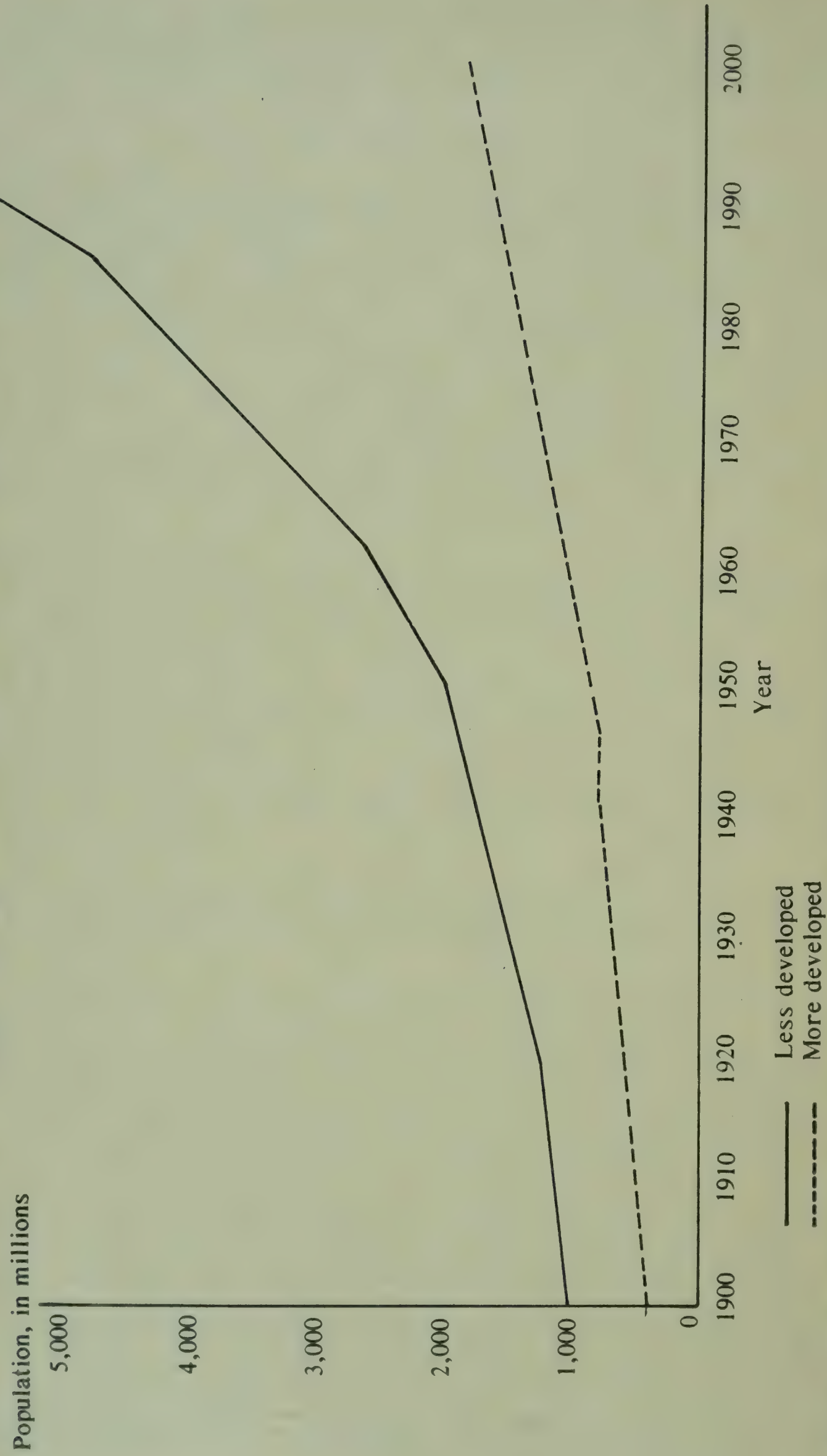
Figure 3 provided a graphic comparison of the pace of population increase for Europe in the nineteenth century, when it was undergoing industrialization, with that of the ECAFE region in the twentieth century (and projected to the year 2000).

The population of the ECAFE region had grown from about 600 million in 1800 to about 915 million in 1900. The increment of about 315 million in the nineteenth century in the region had been larger than the total population of Europe, 296 million, in 1900. The current population of the region was estimated at about 2,100 million, which was about 130 per cent more than that estimated for the beginning of the century. The projected estimate for the year 2000 was 3,569 million, implying, roughly, a fourfold increase over the figure for 1900.

The average rate of annual growth of population in the ECAFE region during the 1940s had been 0.8 per cent. It had jumped to 1.9 per cent during the decade of the 1950s and to 2.2 per cent during the First Development Decade, and was expected to reach a peak of 2.3 per cent during the Second Development Decade. Average growth for the first half of the century had been 0.7 per cent. It was expected to be 2 per cent per annum for the second half of the century.

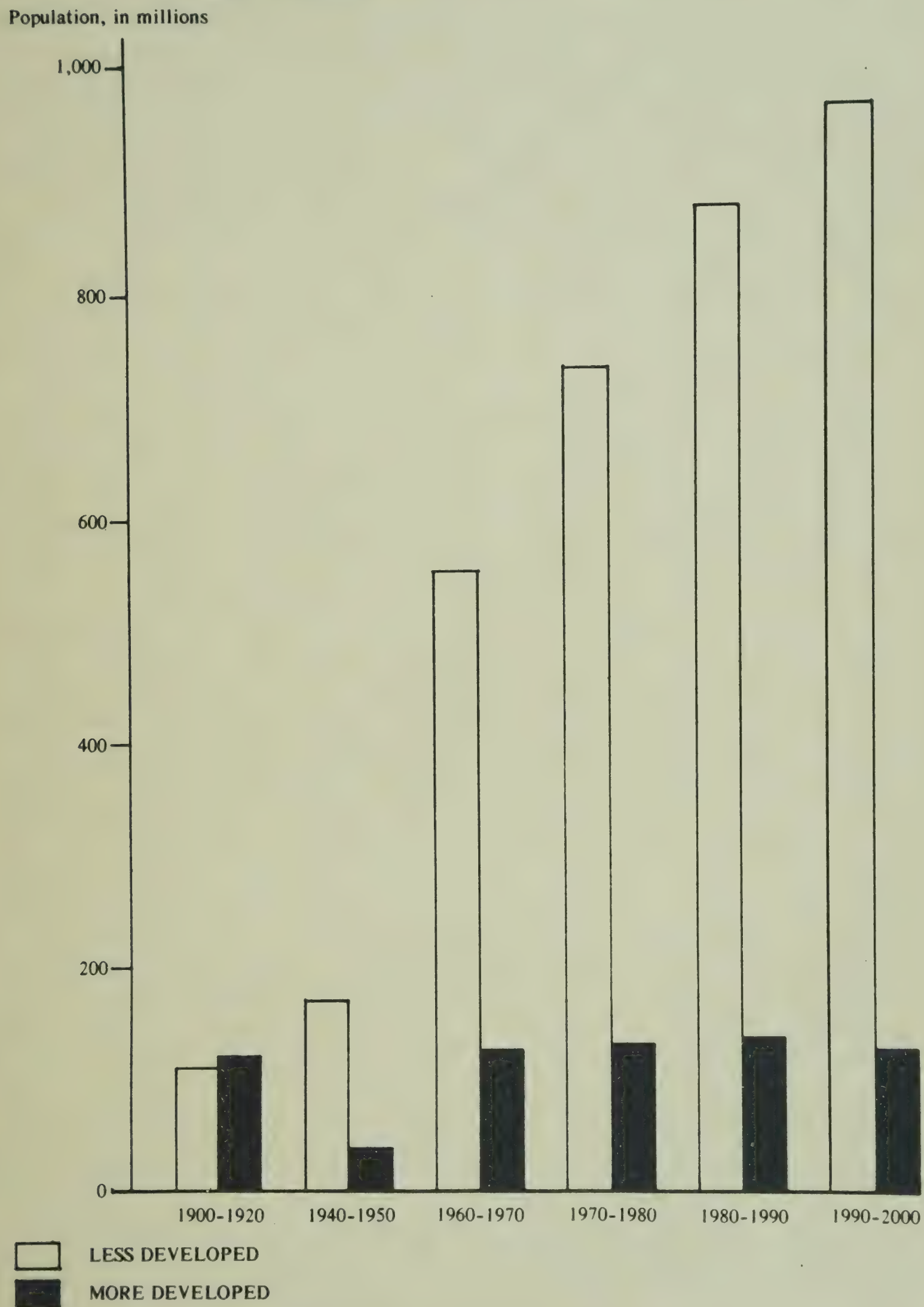
The current demographic changes were not only rapid but large. As the population increased, the successive additions became larger every year. Even

Figure 1. Population of the more developed and less developed regions of the world, 1900-2000



Source: "The demographic situation in the ECAFE region" (POP/APC2/BP/1), table 1.

Figure 2. Increase in the population of the more developed and less developed regions, 1900-2000



Source: "The demographic situation in the ECAFE region" (POP/APC2/BP/1), table 10

Figure 3. Population of the ECAFE region and Europe, 1800-2000

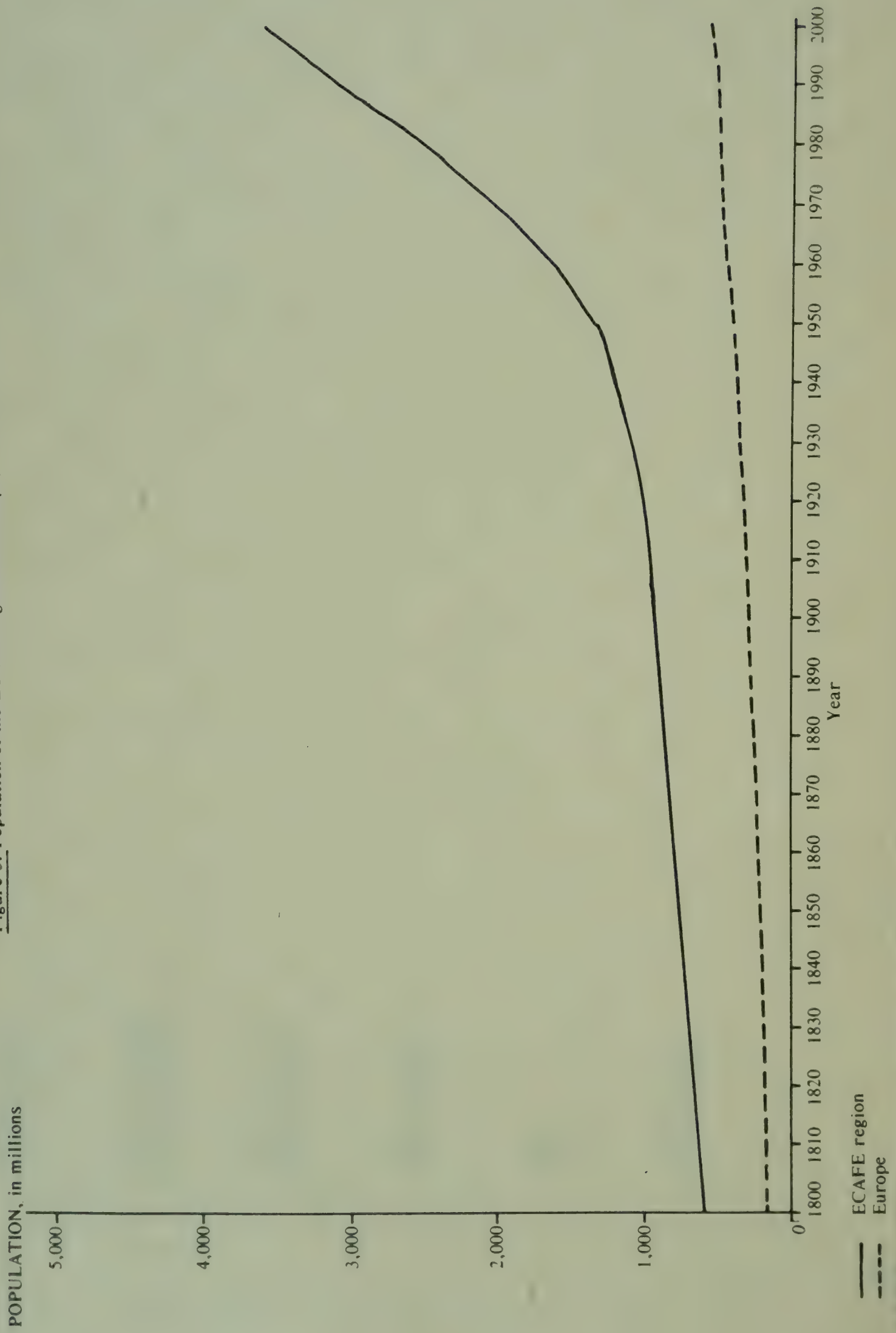
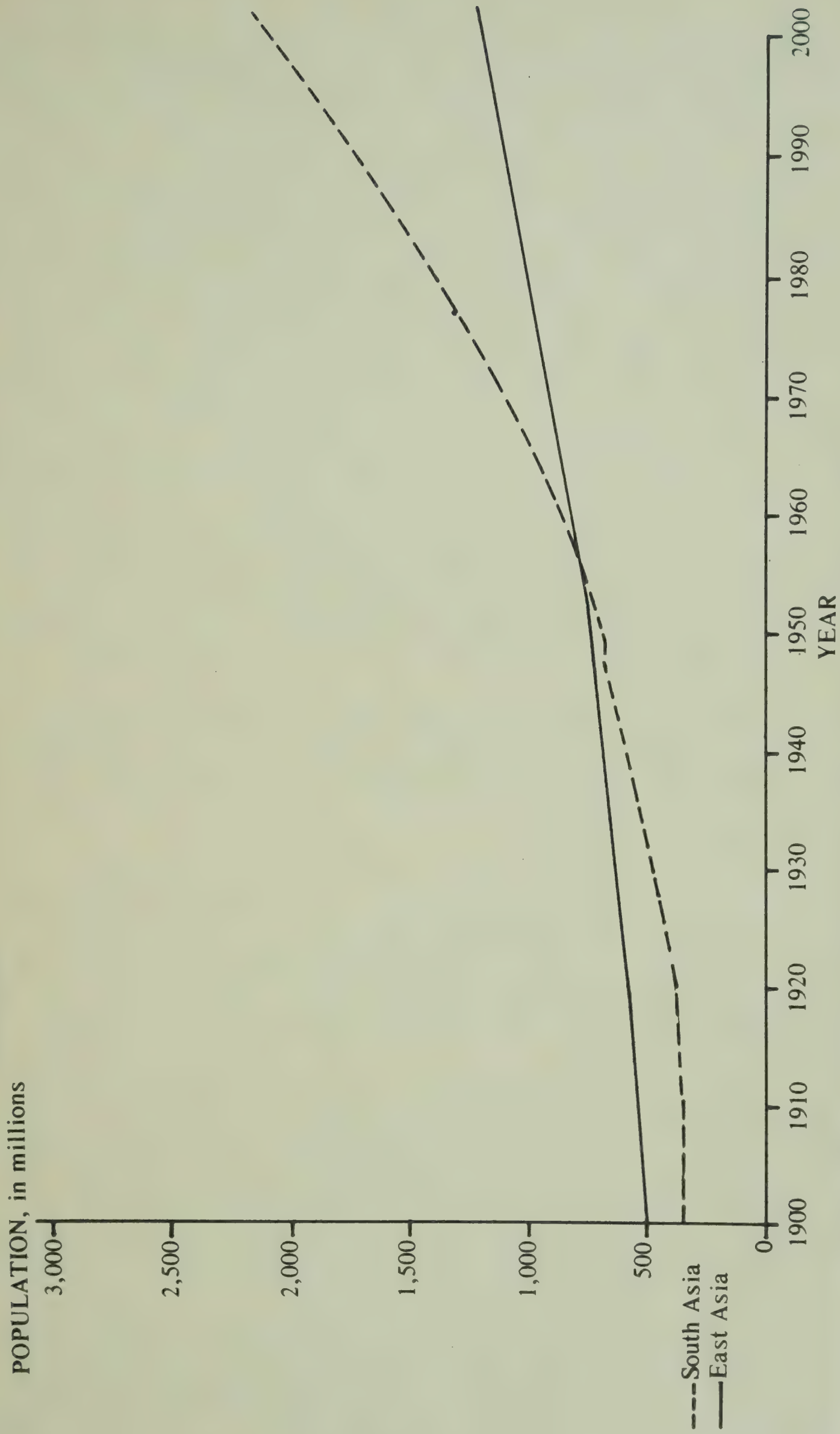


Figure 4. Population of ECAFE countries in east Asia and south Asia regions, 1900-2000



SOURCE: "THE demographic situation in the ECAFE region" (POP/APC2/BP/1), table 1

in a period of two years (1970-1972) the addition to the population of the ECAFE region had been estimated at 96 million, and another 100 million would be added between 1972 to 1974. In the nineteenth century, a change of that magnitude in the region would have taken 30 years.

Figure 4 showed that, within the ECAFE region, east Asia and south Asia (constituting middle south Asia and southeast Asia) had different population growth trends, although for the first half of the century, their growth had been closely parallel. At the beginning of the century, east Asia had had 84 million more people than south Asia. It was estimated that, by the end of the century, south Asia might have about 700 million more population than east Asia. East Asia included Japan, the only highly developed nation in the Asian part of the ECAFE region, and other countries which in recent years had been moving rapidly into the demographic transitions: China, the Republic of Korea and Hong Kong. Some countries of south Asia also had made significant progress in lowering their fertility rates, notably Singapore, Malaysia and Sri Lanka. Within other countries, there were areas in which similar declines were noticeable.

The drastic reduction in mortality following the Second World War had been largely responsible for accelerating the rate of population growth and altering the course of demographic history. Recent estimates showed that the decline in the crude death rate from the period 1950-1960 to 1960-1970 had been higher in the less developed regions of the world than in the more developed.

On the other hand, the progress in the reduction of fertility rates in the less developed regions of the world in general and in middle south and southeast Asia in particular had been limited. During the previous decade, countries of the two subregions of ECAFE had made significant progress in the establishment of official family programmes.

Should countries in the region achieve major successes in regulating fertility — which, in view of expected developments in basic science and in contraceptive technology, was not unlikely — the estimated total population at the end of the century might be 2,804 million instead of 3,569 million. Although the estimated population for 1900 might be tripled by the end of the century, a net reduction of 764 million in the estimate for 2000 would be highly significant.

One common feature of the composition of the region's populations was the high masculinity ratio. With the exception of Indonesia, Japan, the Khmer Republic, Mongolia, Nepal, New Zealand, Thailand and the Republic of Viet-Nam, all the countries had masculinity ratios that significantly exceeded 100. Among other factors, the finding that females had higher mortality rates than males was a possible explanation for the observed high masculinity ratios. That implied that greater potential existed for the decrease of female mortality rates, which, in turn, could increase the potential for accelerating birth rates.

Children aged 0-14 years formed about 40 per cent of the total population of the region. That proportion was significantly higher than in the more developed regions of the world (28 per cent). During the remainder of the century the female population in the reproductive ages would grow at a faster rate than the

total population, thus increasing further the potential for offsetting the efforts in the field of family planning. The population in the working age in the next three decades would also increase at a faster rate than the total population, adding to the manpower problems.

The current size of the urban population, 25 per cent, was likely on certain assumptions to increase to about 44 per cent by the end of the century. During the period 1970-2000 both urban and rural population would increase, although on current indications the percentage of increase in urban population was expected to be of a much higher order as compared to that of the rural areas. Those large increases had major implications for economic and social development, and posed serious challenges to urban and rural planners in solving human problems.

Some countries of the region were among the most densely inhabited in the world. The prospect of an increasing density at even moderate or low rates of population growth had grave implications for the quality of life. Although the level of urbanization was comparatively low, being approximately 25 per cent of the total population, there were about 500 million persons concentrated in urban areas in the Asian part of the ECAFE region. That number might triple by the end of the century, as out-migration from rural areas increased. Even with slower growth in the rural areas, over 270 million might be added during the current decade.

Problems associated with the increase, composition and distribution of population in the region emphasized the great need for intensive research regarding individual countries in order to gain scientific understanding of the interrelationships between population dynamics and changes in economic and social conditions.

Demographic statistics

An examination of the position in the ECAFE region revealed that considerable improvement in the collection of demographic data had taken place in the past decade or so. But the improvement had been uneven. Such progress had been effected through the development of censuses, sample surveys and sample registration.

Only four countries among the thirty-one in the region had never conducted a population census, namely Afghanistan, Bhutan, Laos and the Republic of Viet-Nam. In the recent round of the 1970/71 censuses, no less than twenty-one countries had conducted them. In addition, some countries had conducted demographic surveys or multipurpose surveys to obtain estimates of population parameters, but most were conducted at irregular intervals and suffered from various shortcomings.

The vital registration system existed in almost all countries of the ECAFE region, but only nine had complete or nearly complete coverage of birth and death statistics. Countries which had almost complete registration of vital events accounted for only 7 per cent of the total population of the region. Sample

registration to obtain annual estimates of vital rates had been carried out in Indian and Pakistan. There seemed little likelihood that vital registration would be improved in the near future; hence, countries should be encouraged to undertake sample registration and sample surveys.

Although substantial progress in developing demographic statistics had taken place in the region, there was a general consensus that scope for further improvements still existed. Major problems associated with the poor quality of census, vital registration or survey data, were low literacy rates, enumerator bias, response errors, incomplete area and population coverage, inadequate definition of concepts, and differences between definitions and their application in the field.

There was general agreement that a substantial effort should be made to generate up-to-date, reliable and comprehensive statistics from censuses, surveys and vital registration systems. The desire for improved data might not be easy to attain because of numerous obstacles such as lack of statistical personnel, inadequate funds and problems related to data-processing. In population censuses, one of the main objectives was to expedite data-processing so that the essential figures would be there to meet the immediate needs of users. Some possible solutions were the production of data from sample tabulations, supplying high-priority figures in the first instance or, perhaps, to employ the manual method to produce basic figures in the case of large populations. It might also be necessary to make adjustments to the tabulation programme to provide additional data to meet new requests. The establishment of a committee of users to determine their needs and priorities would be beneficial to producers and users alike.

Adequate funds to enable the production of the types of data that were considered urgent and essential might not be forthcoming. However, if the population census could yield data satisfying the much-felt needs of the users, requests for funds might then be viewed with greater sympathy. The availability of useful information to users might generate further demands for statistics upon which subsequent requests for finance could be based. The other serious obstacle was the shortage of statistical personnel. That problem was being met in part by the Asian Statistical Institute, which provided statistical training to personnel from the ECAFE region. A desire for more funds from the developed countries to increase the number of training fellowships was expressed.

The necessity of sticking to a common basic number of items to be included in a population census and of standardizing collection procedures was brought out. A programme of evaluation of census results would improve the comparability of statistics and would facilitate comparative studies. Support was expressed for the leading role played by ECAFE in this particular task.

It was brought out that efforts to reduce rates of population growth through family planning programmes often included targets for lowered birth rates by a specific date, but that no adequate methodology had been developed for translating such goals into family planning targets. There was disappointment when goals were not achieved, but that was the result of plans being made without knowledge of the logistics involved. The need for research in that area was crucial. Certain

methods of evaluating the impact of family planning programmes were outlined. The component method was felt to be an appropriate approach which could be used in measuring the impact of future family planning programmes, but the data requirements and methodology were too stringent for the resources of most of the countries of the region. Simpler methods were, however, available.

It was suggested that Governments should provide assistance to programmes that led to a comprehensive and accurate basis of statistical data on the demographic situation and for programme operations.

Demographic, social and economic interrelations

In discussing the factors affecting population change, it was recognized that population change and socio-economic variables were closely interrelated. A number of those socio-economic variables had been identified. Some of the common factors in the ECAFE region which appeared to affect the demographic condition were improvement in health conditions associated with public health efforts, family planning programmes, industrialization, later ages at marriage, more equal distribution of food and income, improvement of educational opportunities and quality, and the changing roles of women and their level of participation in the labour force. It would be necessary, however, to evaluate the influence of those individual socio-economic factors on demographic change, especially on fertility decline. It was of paramount importance to identify the optimum combination of socio-economic factors to achieve the objectives of population policies.

An increasing awareness that family planning, important in itself, was not sufficient to solve population problems in the absence of other appropriate socio-economic measures was also noted.

Since socio-economic development was related to population change, the relative priority of socio-economic and population measures should be evaluated. There were differences in the short-run and the long-run impacts of the various measures. Since the major impacts of declining fertility were long-term ones, there was a danger that short-run plans might be concentrated on development programmes in economic and social fields rather than in family planning. That danger should be averted since the problems associated with population growth became increasingly difficult over time.

The relations between family planning, declining fertility and income distribution were noted in many of the discussions. There were arguments that the early stages of fertility control and family planning programmes led to further disparities in income distribution because certain persons already in a position of advantage were further advantaged by the family planning services. There were also suggestions that a more equal distribution of resources, income, and services would create conditions more favourable to the success of family planning programmes and fertility decline.

There was clearly a need for proper and greater utilization of whatever research findings were already available in policy formulation and implemen-

tation. Action programmes should be formulated and implemented with whatever information was at hand. Current programme information and the results of on-going studies should be used as they became available. It was recommended that careful studies be conducted to examine the factors that had contributed to population change, particularly in fertility, and that such studies be designed to meet the needs in policy formulation and implementation. Governments should furthermore ensure that full use was made of available programme data and survey findings in decision-making processes with regard to population policies and action programmes.

In formulating and implementing socio-economic measures, there was a need to increase administrative capacity, including statistical capacity, in part to overcome administrative and other constraints which had hindered the acceptance of new technology, especially in the field of family planning. As family planning was becoming more extensive and more complex, improved administrative and management skills were essential. That called for the training of family planning administrators in the field of management skills.

The integral association of population change with economic and social developments was not new in the countries of the ECAFE region. A distinctive aspect of the Asian scene was the early recognition by Governments in the region that population itself was one of the fields of government concern. Policies and programmes to influence growth included both mortality and fertility. Here it was recognized that the intensive efforts to reduce avoidable deaths had led to rates of population growth that had detracted from individual and family betterment as well as general social and economic advance. Policies had been adopted and programmes developed to provide family planning education, advice and services to the people wishing for them. Increasing numbers of countries had adopted such policies and developed programmes and accorded higher priorities to them over time.

The inadequacy of the separate developments in the various fields during the First Development Decade was recognized. The field of family planning and the programmes to provide services and means were intertwined with social and cultural factors, ethical values and religious beliefs. Social and economic development and family planning programmes should be viewed as mutually reinforcing rather than as competitive claimants for scarce resources. Fertility interpenetrated other population processes, including not only mortality but mobility and migration. Changing fertility was closely related to changing family structures and functions. Age at marriage reflected social and economic modernization, and changing ages influenced fertility.

The urgency of the problems of population growth had a direct relevance to the responsibilities of Governments in many fields and required the establishment of goals related to the slowing down of population increase and the eventual achievement of low rates of population growth. Those changing rates of growth were related to the achievement of a way of life that accorded more closely with the aspirations of the people and the development of communities, regions and nations. In arriving at the following list of goals and trends, the Conference recognized that it did not imply any order of priority. Even the fragmentation

of the listing was artificial if viewed from the standpoint of individual or family hopes, community institutions or integrated national development.

1. Health, nutrition, and shelter at minimum and advancing levels.
2. Educational opportunities for youth without consideration of place of origin, sex or class.
3. Employment opportunities for men at the levels of productivity and income that initiate or stimulate appropriate changes in family structure and fertility.
4. Increasing opportunities and wider roles for women in family, community and nation.
5. Reduced inequalities in the standards of living, the facilities and the opportunities of people in both rural and urban areas and between the two.
6. Diffusion of the ideal of the small family, through intensive and wide-spread educational efforts, as being conducive to better opportunities for families, community advance, and national development.
7. A focus on education, social change and economic developments that encouraged delayed marriages and small families.
8. Equal access for all families to understanding, information, means and services in the control of reproduction and the planning of family size.

Specific issues in interrelations

The associations among economic, social and population factors were many and complex. The goals, the plans and the course of events required integrated economic and social development. Those were general statements, whereas planning required separate assessments, strategies, and programmes. There was then the further requirement of assessing and evaluating each programme to ensure its maximum impact on programmes in related fields. Each planned programme was implemented in a matrix of interrelations with other programmes. Those intricate interrelations occurred in a changing milieu. Accumulated experience permitted the evaluation and modification of existing programmes. Scientific advances and experimental projects permitted or required new approaches. The assessment and allocation of priorities were thus continuing tasks. That was particularly true in the field of population development, which was a relatively new field of governmental responsibility and action.

The experience with population, social and economic development programmes, taken together with the continuing assessment of the dynamics of population, suggested many areas in which previous assumptions about the structure of interrelationships should be assessed and emerging evidence or theories about interrelationships tested. Some of the bases for the innovative changes and the altered developments of the 1970s as contrasted with earlier decades were noted, as follows.

At the time of the First Asian Population Conference, problems of food and population had been crucial. New technologies and systems of production, subsequently developed, however, appeared to have postponed for several decades the time when the problem of feeding the population might become quite unmanageable. Thus there was a limited respite in which to bring about a decline in fertility and a slowing down of population growth. The tasks remained major but

they seemed soluble. Currently the agricultural and the population transformation were being assessed on the basis of experience rather than conjecture. Two needs were critical: first, the optimum national allocation of population as between rural and urban areas, agricultural and non-agricultural occupations; second, further modification of the agricultural structure and of rural life to speed the reduction in fertility in the rural areas themselves and among the rural migrants to cities.

Social, economic and political considerations underlay the widespread desire to move toward greater equality in the distribution of resources and income. It was argued that such equalization would contribute to the reduction of fertility and hence help in the solution of the problems associated with population growth. The precise determination of the interrelations through the examination of existing experience or through experimental projects appeared crucial.

One country in Asia had already passed through the demographic transition. There were smaller countries where fertility had declined very swiftly; and there were local areas and regions within other countries where fertility was falling. The experience of one country or area could not be immediately transferred to another, but the examination of the relative weights of the various factors in economic, social and demographic developments in initiating and sustaining fertility declines might provide suggestive clues for programme planning in other countries where such declines had not yet occurred.

In those Asian countries where fertility was now declining swiftly, family planning programmes had been introduced into populations where fertility was already on the decline. The experiences of those countries permitted comparisons of the age patterns, the speed and the social-economic bearings of fertility declines occurring as a consequence of social and economic development and those associated with family planning programmes designed to reach the masses of the people. There might also be clues as to the types and levels of social and economic development conducive to or associated with declining fertility in the contemporary Asian setting.

The relations between education and fertility were often noted and discussed as a base for strategies to achieve reductions in fertility. One approach was to focus attention on schooling and the number of years of school completed. There was another innovative approach which involved the use of mass or specialized education and modern communication facilities to diffuse the small family ideal and stimulate the acceptance and use of family planning services.

It was obvious that people living in marginal conditions where death rates were almost as high as birth rates were not likely to accept family planning. Those people, however, comprised decreasing proportions of populations in contemporary Asia. Minimum levels of health and nutrition were necessary before family planning could become acceptable; and there was a further associated level at which it was feasible, if difficult. The actual relations between health, nutrition and the acceptance of family planning in specific settings within particular countries should, when established, provide some basis for the allocation of resources among the various developmental fields.

The relations between economic factors and the acceptance and efficiency of family planning were still widely debated. In some countries there were prices for services and supplies, while, in others, they were free. In some countries, incentives seemed to be major stimulants to acceptance. In other countries, there were disincentives of various types. In time, general principles might emerge which would indicate under which conditions family planning was more likely to become acceptable.

It was now widely believed that the advancing status of women was directly associated with declining fertility. That had been true historically; it was true in the Asian countries with low or declining fertility. The broad principles of action were obvious, and they were justifiable on social and humanitarian as well as demographic grounds. Exploration in that field required the determination and testing of specific practical means in various legal, social, economic, cultural and political fields.

Arguments were sometimes advanced for the increased utilization of women in the labour force as a factor in establishing motivations and life styles that led to declining fertility. There were major areas for exploration there. What were the types of occupation and of employment opportunity that were associated with reduced fertility? What were the economic, social and demographic correlates of an increasing employment of women when substantial proportions of men were unemployed or under-employed?

Recommendations

1. That population policy should be defined in such a way that consideration was given to the numbers, the distribution and the structure of human populations: marriage, family and fertility; health and mortality; mobility and migration; growth; age structures and changes; rural-urban and regional distributions and redistributions.

2. That family planning be recognized as an essential means to achieve family well-being; and family planning programmes, as an essential means to achieve national goals of the countries wishing to reduce population growth rates.

3. That development be viewed as an integrated process and that the complex relations of economic, social, political and population plans and developments be assessed in the programmes in every field.

4. That Governments provide a comprehensive and properly evaluated base of statistical data on population and related variables to guide decisions and measure changes at all levels. That implied a higher priority for the development of appropriate, sufficient and timely population and related statistics.

5. That population and economic and social development be given a co-ordinated and integrated status in national planning and plan organizations.

6. That countries establish action-oriented population development planning units appropriately placed at high levels in the administrative structure.

7. That the requirements in planning be met and the increasing sophistication in methodology be provided through national institutes of population planning and development.

III. MANPOWER AND EMPLOYMENT IN THE CONTEXT OF ECONOMIC DEVELOPMENT

The growth of the labour force during the forthcoming fifteen years or so had been largely determined by previous population growth, since those who would enter the labour force, were already born. The total labour force in the Asian countries was estimated to increase from about 780 million in 1965 to over 1,000 million by 1980. The annual rate of growth was likely to be not less than 2 per cent during 1965-1980 and might even approach 2.5 per cent towards the end of the period. Most parts of Asia except Japan would remain mainly rural. Although the urban population would grow at much higher rate than the rural, the latter was estimated to be more than 78 per cent of the total Asian population in 1980, and the bulk of the Asian labour force would be in rural areas where agriculture was and would remain the major sector. To some extent, the size of the labour force would be influenced by developments in the social and economic fields which might change the participation rates in certain age groups. Also, declines in fertility might tend to raise female participation rates. However, such marginal changes in labour force participation rates would not reduce significantly the massive growth of the labour force during the Second Development Decade.

While those developments over the next fifteen years constituted a serious problem for employment policy, the trends in fertility and rates of population growth during the 1970s and 1980s would have a substantial impact on the nature and magnitude of the employment problem during the last two decades of the century beyond. It appeared therefore that the adoption of the small family norm would contribute to the relief of the problems of employment in the region.

Structure of the labour force

Although the size of the labour force had been largely determined for the following two decades, there were likely to be significant changes in its various characteristics. For instance, as a result of the expansion of educational and training facilities, there was likely to be a change in the educational and skill levels of workers. Further, the proportionate distribution of the work force between rural and urban areas was likely to change. Another such change resulted from the movement of people from subsistence to monetary activities, both for wage employment and self-employment, in many countries of the region.

As a result of such changes, a number of social and economic stresses and strains had already occurred and were likely to continue. For example, the expansion of educational facilities and opportunities had so outdistanced job opportunities that the expectations of educated youth had not been fulfilled. The economically wasteful and socially dangerous phenomenon of the educated unemployed or underemployed had become an urgent problem for many countries of the region. Also, the pronounced tendency of the rural workers to migrate to the towns, either permanently or temporarily, in search of employment or as a diversion from village life had added a new dimension to the urban unemployment problem, which had potential social dangers.

Such were the major problems of the region as a whole. However, there were many significant differences among individual countries of the region, especially

among countries at different stages of development and among countries of different sizes. Those differences related not only to the magnitude and nature of the problems facing individual countries, but also to the type of policy appropriate in each case.

The rapidly growing size of the labour force and its changing structure both posed problems which demanded urgent attention. In order to tackle them, there were a number of requirements. First, there was a need for adequate data. In view of the complex interrelationships among the factors involved, a great deal of factual information about the existing situation was needed. One of the most fruitful means for obtaining such information was the more intensive cross-tabulation of the sort of data that were already collected in censuses and surveys. In some cases, they might need to be supplemented by special sample surveys. Second, the data that were collected needed to be analysed intensively and promptly. It seemed probable that, in some cases, valuable data had remained unanalysed. The analysis with due attention to policy needs would provide the Governments with a firm basis for planning, formulating and implementing appropriate employment policies.

Need for new definitions and concepts

In the past, there had been great progress in the application of standardised definitions and concepts to the measurement of the labour force and the levels of employment and unemployment. However, there had been some concern as to whether some of those definitions and concepts were reasonably well suited to carrying out such measurements in the special circumstances of the developing countries. For example, some of the estimates of the levels of unemployment that were cited did not provide an adequate understanding of the extent and nature of the underutilization of labour.

Unlike the developed industrial countries, a person's precise status in respect of his economic activity could not in general be determined by any simple criterion in the developing countries. Further, it was difficult to make clear distinctions between employment, underemployment and unemployment. There was, therefore, a need to develop more realistic approaches to the measurement of labour utilization. A reference was made to the collaboration between ILO and FAO in the methodological studies for the measurement of the underutilization of rural labour and to methods being developed by the Organization of Demographic Associates (ODA) and the Council of Asian Manpower Studies (CAMS), in collaboration with ILO. Those methods essentially attempted to measure the degree of labour utilization by taking into account of the workers' input of labour, (e.g. hours of work per week) and the productivity of such labour, as measured by workers' income or some similar index. An important issue in the measurement of labour utilization was the extent to which the work that a person performed was consistent with his education, training or skills. Also, for the purpose of formulating policies and programmes, it was necessary to measure labour utilization according to various characteristics of individuals and of the sector in which they were deployed.

It was desirable that such new approaches be tried and, if found suitable, applied in future surveys and studies. However, it was important to provide for continuity in measures of the labour force, by using at least for a while the former concepts concurrently.

Some of the discussants felt that the labour force projections being used in some countries did not take full account of the likely changes in labour force participation as a result of social and economic change or of the direct and indirect effects of changing vital rates or migration. The impact of the declining mortality rates from birth to the age of entry into the labour force as well as increased chances of survival throughout the working ages tended to affect the replacement ratios to an extent which was insufficiently reflected in the labour force projections. A combination of labour force projections with tables of working life was suggested as a possibly useful device.

Manpower and employment policies

The development policies of the past had not succeeded in providing opportunities for productive employment that kept pace with the growing labour force. As a result, many countries of the region were starting the Second Development Decade with massive levels of labour underutilization and its attendant social and political dangers. Those problems were likely to be compounded in the years ahead as a result of the expected large additions to the labour force.

A primary objective of development policies must therefore be a rapid expansion of employment opportunities to absorb the additions to the labour force in gainful employment. Given the multiple interrelationships among the factors affecting employment, development policies had to follow an integrated approach, as proposed in the strategy for the Second Development Decade. Such an approach had been recommended by the interagency teams sent to some countries by ILO under its World Employment Programme.

A number of elements would go into an employment-oriented development strategy. Given the current and likely future demographic situation, the basic need was to make production in all sectors of the economy more labour-intensive. One of the ways to achieve that was by a wage structure which was not too rigid but would adapt itself flexibly to the promotion of fuller employment. At the same time, the wage policy should not neglect the demands of social justice for a more equitable distribution of income. Action at the macro-economic level might be possible through the use of monetary and fiscal policies, although those policies might be less effective in the developing countries. The alternative of adjusting the output-mix and encouraging the export of labour-intensive commodities depended on the extent to which the developing countries could gain access to the markets of the developed countries.

However, all measures which tended to give excessive incentives for capital-intensive methods, to distort factor-price relationships and to aggravate the underutilization of labour should be avoided. The question of technology appropriate for the resource situation of developing countries was a matter of crucial importance for employment promotion in both the agricultural and non-agricultural sectors. Research and development (R & D) effort in that area had been very limited and needed to be strengthened. ECAFE and the countries of the region could profitably allot increased resources for that purpose.

In formulating policies to increase the gainful employment of the growing labour force, due attention should also be given to the conditions of work and

workers' preferences. More research was needed on the factors that influenced workers' effort or their mobility. The fear was expressed that employers might prefer capital-intensive technology in order to avoid the problems of managing a large work force. The proper education of workers and employers with respect to the social benefits of increasing employment might help to improve the prevailing atmosphere.

Agriculture and employment

For some time to come, agriculture would remain the major sector of the economy of most countries of the region. It was therefore important to ensure that the development of the agricultural sector was geared towards labour absorption. In many countries of the region, the plans for economic development prepared in the 1950s had pinned their hopes on a substantial alteration of the structural distribution of their labour force. It had been hoped to reduce the pressure of population on land by absorbing at least the additions to the labour force outside agriculture, as had happened in the developed countries of the West and in Japan. The experience of many countries of the region had, however, brought out the serious difficulties in achieving that objective. The rates of population growth during the 1950s and 1960s had exceeded the levels that appeared likely in the early 1950s. Secondly, the labour absorption capacity of the non-agricultural sector had perhaps been overestimated. As a result, a substantial decline in the proportion of workers engaged in the agricultural sector in the immediate future appeared very unlikely, and the large additions to the labour force that was likely to occur in the next fifteen to twenty years would have to be absorbed in the agricultural sector.

Given the expected rapid increase in the size of the urban population through national increase alone and the need to minimize urban unemployment, a fair volume of investment would have to be devoted to the absorption of urban workers in non-agricultural employment. However, the costs of creating additional employment opportunities in the large cities tended to be much higher than those in agriculture. That factor had reinforced the realization that improvements in agriculture must be given a higher priority of attention.

The fear of imbalance in population and food supply during the late 1950s and early 1960s had been instrumental in a welcome increase in the allocation of resources for research on the evolution of high-yielding varieties of seeds. Its success had opened up the possibility of increasing the frequency of cropping and reducing the seasonal fluctuations in employment. Some studies in "green revolution" areas also indicated that, despite the rise in wage rates, there had been little substitution of family labour for hired labour, and that the increase in the demand for hired labour had been faster than the increase in the input of family labour. Those trends provided a welcome hope for the additions to the labour force from among the ranks of the landless. However, in order to absorb additional labour in agriculture, new high-yielding varieties of seeds would need to be developed, not only for wheat and rice but also for other crops in the region. Adequate resources must continue to be devoted to such research on a high-priority basis.

There was a concern that the "green revolution" by itself might not prove

adequate to cope with the employment problem. Therefore, further measures, such as land reform policies and development of co-operatives, deserved attention. For areas where the requirements for introduction of high-yielding varieties of seeds were not satisfied, special programmes such as the creation of rural public works might well be needed.

The results of the twenty-fifth round of the Indian National Sample Survey, which had been devoted to a special study of the employment and unemployment situation of the weaker sections of India's rural population, indicated that a substantial proportion of the landless, as well as the small cultivators, had a definite preference for work within the village and that many of them were not willing to take up regular full-time outside employment. Such preferences of the people as to the location and nature of work opportunities deserved careful attention in the planning of rural work programmes.

The Conference discussed the experiences gained in special programmes designed to increase employment in rural areas. It noted the experience of Indonesia with its village and kabupaten programmes under which the central Government subsidized the local authorities to increase rural employment, undertake village improvement and develop infrastructure. An interesting experiment was in progress in Kerala state, India, where persons working on agreed projects were paid 50 per cent of the current wage, while the balance was deposited in a bank for payment at a later date.

A reference was made to a suggestion of the ILO interagency mission to Sri Lanka that a national youth service be established and participants paid a wage lower than the normal, the difference to be placed in a fund for training and special youth schemes.

Integration of manpower and development planning

The discussion of the employment problems facing many countries of the region had clearly indicated the importance of following an integrated approach to their solution. Such an approach was all the more necessary because of the complex interrelationships of the factors influencing labour absorption. An attempt to follow it would, however, raise important issues of organization of the machinery for planning and policy formulation and evaluation. In some cases in the past, there had been a tendency to leave problems in that field to a manpower planning agency, somewhat distinct from the over-all development planning authority. In the future, it would be more useful to make the manpower planning agency an integral part of the over-all planning agency. In that way, manpower considerations would be taken into full account in all the major decisions affecting the country's development efforts.

Recommendations

On the basis of its discussion of the problems of employment, the Conference made the following recommendations.

1. Because of the prevailing and likely future demographic situation in the region, the labour force would grow rapidly. It was necessary that the need for

generating substantial productive employment opportunities be adequately reflected in the planning priorities of the member countries.

2. Effective action should be taken both nationally and internationally to help increase the exports of labour-intensive products to labour scarce developed economies.

3. Because labour-intensive small farms could be made as efficient as large farms, land reforms should occupy an important part in development plans.

4. To minimize conflict between output and employment maximization, research on the adaptation of technology in a labour-intensive direction throughout the economy deserved serious attention.

5. To provide a firm base for policy-making, research should be undertaken in order to improve the concepts of measurement and to attain the maximum possible uniformity of the definitions of labour utilization. There was also need to carry out a detailed analysis of existing data.

6. Because of the massive increases in the labour force and the serious difficulties in generating employment on a scale adequate to meet them, intensive education and educational efforts to lower fertility levels were urgently needed in order that future increases in the size of the labour force could be moderated..

IV IMPLICATIONS OF POPULATION GROWTH FOR AGRICULTURAL AND INDUSTRIAL DEVELOPMENT

The discussions on this topic were focused on the interrelationship between population growth and agricultural and industrial development. On the agricultural side, the discussions included the interrelationship with agriculture, food supply and nutrition especially in the context of the recent "green revolution" in the developing countries. On the industrial side, the interrelationship with growth of employment manpower and industrialization was discussed.

The major points of discussion and conclusions are presented below.

The rapid growth of the labour force had brought in its wake growing unemployment and underemployment. Children born after the Second World War were entering into the productive age with fewer losses due to mortality. It had been estimated by ILO that the labour force of the developing countries as a whole would have increased by about 23 per cent between 1970 and 1980, with a particularly high rate of increase in Asia (about 2 or 3 per cent annually).

Studies by FAO had revealed that the annual rate of growth in gross domestic product and in food supply had been of the same order in the developing and developed countries of the world. However, in developing countries, most of the gains had been offset by increases in population. By contrast, the developed countries had retained nearly 75 per cent of the average increase in gross domestic product and 50 per cent in food supply to improve the levels of living. It did not necessarily follow that a more moderate growth of population would enable the developing countries to fare better, but it did show that large land and capital resources were needed by the developing countries for feeding their growing populations even at the current unsatisfactory levels. It was also found that, although the annual average rate of growth in food supply had been reasonably high, there had been periods when the rate of growth had dropped so low that concern had been expressed as to whether developing countries in Asia with limited resources of tillable land would be able to feed their growing numbers much longer. That, in fact, had been the situation in the early 1960s.

The recent break-through in agriculture had changed the situation. Food supply per capita had made appreciable gains everywhere since 1966, largely as a result of the programmes for raising new high-yielding varieties of cereals. It had been estimated that the current level of calorie supply brought Asia and the Far East within five per cent of the average calorie requirement and that the current level of protein supply exceeded requirements considerably. There was, therefore, reason to hope that if the current trend of improvement in cereal production continued, the calorie supply per person would equal or even exceed the average requirement in the course of the next decade. However, there was uneven distribution of food with the poor not being able to procure enough to meet their needs. Estimates made by FAO placed the incidence of undernutrition at some 25 per cent of the population for the region and that of protein-malnutrition slightly higher. What was more important was that the FAO paper quoted evidence suggesting that protein might not be the limiting factor in the diets of the people of the region. What diets lacked might well be energy foods to avoid the body

katabolizing the protein that the people in fact did eat. In other words, the main problem of food supply might primarily be one of inadequate diet to meet the energy needs. It might be expected that, if food supply *per capita* continued to improve to meet the energy needs, the incidence of undernutrition and of protein malnutrition as well would decrease.

However, the expectation was not being realized in actual practice. Available data showed that, as food supply increased, so did the inequality in its distribution.

It was noted that, according to a recent long-term projection of agro-economic trends, it was likely that the prices of some agricultural products, notably rice and, therefore, the income of rice farmers, would decline in coming decades; while on the other hand, the price of other agricultural products such as meat, fish and other protein-rich products would increase. If that were true, if it were also true that the birth rate in rural areas tended to decline with the increase of levels of income and if, furthermore, national Governments wished to utilize their agricultural policy as a tool for controlling population growth, a twofold policy seemed to be indicated: namely that the production of rice, as one of the staple foods in many Asian countries, should continue to be promoted in order to meet the needs of present and coming generations; but that, on the other hand, the production of those agricultural products on which a higher rate of return was likely should also be given additional priority. Unfortunately, however, an increase in the macro-level of food supply did not bring about a corresponding reduction in the incidence of undernutrition, largely because the poor could not afford to buy the needed foods. As a result, the food supply became increasingly restructured to create dietary varieties to meet the needs of the well-to-do sections of the population. In other words, developing countries were not able to hold securely to the improved level of food supply they attained. The basic issue facing the countries in the 1970s was, therefore, one of reducing the inequalities in income and intake and thus ensuring that the poor would have the income to buy an adequate diet while simultaneously ensuring a satisfactory rate of *per capita* income growth.

Population at the minimum level of nutrition did not necessarily have the highest fertility because malnutrition might lower the general levels of health and also fecundity. However, improved nutrition of mothers during pregnancy and lactation and of infants might help in lowering infant mortality and thus provide a basis for motivating the limiting of family size.

The relationship between changes in total output and changes in labour being used was a complex one. There was a need to develop a complementary relationship between capital-intensive modern techniques and labour-intensive techniques. There might be no conflict between those objectives where: (a) labour-intensive techniques were actually available in the countries, (b) the demand requirements of either domestic or foreign markets were compatible with the type of industries which were labour-intensive, (c) the labour-intensive industries could produce products of acceptable quality and (d) vocational training could be undertaken to ensure that workers had the skills required to undertake the needed output in the labour-intensive industries.

Labour-intensive industries must be understood to mean both cottage indus-

tries in rural areas and light manufacturing industries in urban areas. Many historical examples could be found of simultaneous developments of both agriculture and related labour-intensive industries. Some contemporary examples — the Republic of Korea, Japan — had raised the hope that no real conflict existed between industrial and agricultural development.

What was required was an effort to promote labour absorption in rural areas (through agriculture and also through labour-intensive industry) while also promoting an increase in productivity per unit of labour input. It seemed that a very low-productivity, low-income labour absorption policy was neither desired nor healthy in the long run. Using scarce capital to employ the maximum numbers of workers without regard to what was being produced was an inefficient use of capital and human resources.

There was considerable evidence that, owing to improved nutrition and decreased foetal and infant mortality, a short-run effect of modernization in agriculture might be, in effect, a greater number of surviving children. Projections of national populations would have to take that into account.

In Asia and elsewhere, increases in productivity and expanded areas of cultivation had contributed to the growth of populations. The impact on fertility was likely to be a temporary increase. However, the "green revolution" provided a setting in which the integrated changes that underlay the resolution of problems of population growth could occur more easily. If the "green revolution" were to proceed along with other basic social, economic and population changes, the outlook for the population future would become more hopeful.

The conclusion was that the new agricultural techniques permitted achievement of the minimum levels of health, nutrition, etc., thus providing a climate essential to family planning and declining fertility. They also afforded the minimum time necessary for transitions in fertility and rates of population growth to a lower level. In the discussion, the necessity of major and continuing action in the field of family planning was emphasized. Emphasis was also placed on the more equal distribution of population resources, income and opportunities, as essential to the changes at individual and family levels which underlay altered aspirations, the changing roles of women and declining fertility.

Studies of income and consumption levels in rural and urban areas in relation to household size were suggested as a way to learn whether population pressure was recognized at family and community levels.

V. SOCIAL ASPECTS OF THE DEVELOPMENT OF HUMAN RESOURCES

Because of the wide scope of this topic, only the most important aspects could be discussed. They included education, housing, health, nutrition, social security and the role and status of women. At a recent ECAFE meeting held at Bangkok on the socio-economic returns from family planning programmes, agreement had quickly been reached on the very substantial benefits from investment in family planning programmes, so that the rest of the Group's discussion had been devoted to the influence of other investments on fertility decline.^{1/}

It was recognized that much of social expenditure should be viewed as investment expenditure rather than as consumption, although there might be debate about the relative proportions. An important question was how much investment for social development they desired, the answer to the question seemed to lie in the right choice of priorities.

Demands for agricultural inputs, power, steel and capital goods industries and many others competed with demand for social investment but also provided the means to finance social development programmes. The right choice of priorities in directly productive investments, in infrastructure and in social investment itself would increase the resources available for subsequent social development.

For some investments, both social and directly productive, complementary relationships existed, so that a well-chosen expenditure mix might give better results than a concentration on one of the components. Some social investment might be wasted if maternal or child mortality were not reduced. It was suggested that top priority be given to maternal and child care services, including nutrition and preventive health care for mothers and children. National policy specifically directed to backward areas and their populations should also receive high priority.

Essential supporting programmes included improvement in urban and rural housing. Another major contribution to social welfare programmes would be provision of adequate water for drinking and sanitation.

The benefits of literacy and universal primary education were far-reaching and invaluable in the stimulation of social change and the acceptance of new technologies. In those countries which had adopted free compulsory education, they had proved an encouragement for the adoption of smaller-sized families. Emphasis on formal education, however, should be tempered to take account of the great need for training in technological skills, for agriculture as well as industry. Training in new techniques was required, particularly for advancing the "green revolution". In short, the kind of teaching as well as the extension of facilities must be geared to development demands, with possibly greater weight

^{1/} Report of the Expert Group on the Socio-economic Returns of Family Planning Programmes, Bangkok 1972 (E/CN.11/1070).

given to the needs of technical and vocational training even at the expense of academic education. Training in community and local leadership was another area which was felt to deserve greater attention.

The importance of social security programmes, including programmes for provision of old age care, which would have a direct positive bearing on the realization of the small family norm, was appreciated.

Not all measures that might contribute to fertility decline competed for scarce investment resources. In so far as improvements in the status of women, the raising of age at marriage, and so on could be accomplished by exhortation or by legislation, they were virtually costless.

Health and nutrition

The introduction of public health techniques, such as malaria and small-pox eradication programmes, the prevention, control and effective treatment of other infectious diseases and the supply of non-contaminated water to cities and urban areas, had made a substantial contribution to the very rapid decline in mortality and improvement of health in many countries of the ECAFE region. The postwar rate of mortality decline in some countries had been unprecedented in the demographic history of the world's population. However, health services still remained at a very low *per capita* level and were unevenly distributed within the countries. Available data indicated that the cities and large towns were relatively well provided with both medical personnel and facilities. On the other hand, in the rural areas and the small towns, where the overwhelming majority of the populations lived and worked, the medical services were understaffed and physical facilities were inadequate. Transport problems created additional obstacles which made access to medical care, both curative and preventive, difficult.

Qualitative improvements of health services were undoubtedly slowed down by rapid population growth which required disproportionately large investments to be made just to maintain the *per capita* levels of services so far achieved. The problem of a more even distribution of health services required national Government attention. The experience in some countries indicated that a combination of incentives and amenities to the medical and other staff, such as special allowances, residential accommodation and transport, was particularly helpful in achieving that goal.

For many countries of the region the second major factor which had contributed to the improvement of health during the past two decades had been the improvement in the supply of food and the elimination of famines. However, differences still persisted in food consumption and in the incidence of protein-calorie malnutrition, and in many respects those were the major health problems in the region.

The relationship between decline of mortality and levels of fertility was a complex one. Many studies had proved that the chances to survive were less for infants and children born into large families. On the other hand, in the absence of family planning, the reduction of morbidity and mortality of women might lead

to extending their average number of years lived through the child-bearing period and thus to increasing their total fertility rate. Reduction in the rate of adult male mortality also significantly reduced the rate of widowhood. Reduced mortality of infants and children might, after some time, lead to increased acceptance of family planning and of the ideal of the small family.

Housing

At the ECAFE Seminar on Population Aspects of Social Development, held at Bangkok in January 1972, it had been estimated that, in Asia and the Far East, 40 per cent of the urban population and 50 per cent of the rural population were living in unsanitary and overcrowded quarters.

Housing had often been accorded a low priority by development planners, principally because the capital-output ratio was measured at current market prices and techniques were not suitably adapted in a labour-intensive direction. However, self-help housing schemes, where the houses were constructed by prospective occupants in their spare time, would involve a low social cost. In any case, the appropriate pattern of housing was not something that could be decided in the abstract, since it was largely dependent on land prices; for example, self-help housing implied low densities which might be appropriate in localities where prices were low, but not in very large metropolitan areas.

The experience of the very extensive public housing programme in Hong Kong showed that constraints on housing programmes might not be only financial but also physical and administrative. Financial implications did, however, mean that, in most countries, housing must be principally the responsibility of the private sector.

From experiences in Asia and elsewhere, it appeared that the shortrun effect of improved housing on fertility might not always favour a reduction in birth rates; the opposite might indeed occur. The sense of security provided by house ownership or secure tenancy, however, eventually encouraged economic aspirations incompatible with large families, so that after a timelag housing improvements might also contribute to fertility decline. One Asian country had recently adopted a housing policy which was intended to discourage large families.

Status of women

The raising of the social status of women as well as of their position within the family was a concomitant of the changes brought about by educational progress and the complex process of modernization. Employment outside the home assisted frequently in elevating women's place in the community and provided incentives for postponement of marriage and child-bearing.

The improvement in the position of women in society was frequently considered a significant factor contributing to the shift to the small family norm. Nevertheless, there were still gaps in the knowledge and understanding of the causal factors linking the status of women with the decline in family size. Those were due to conceptual and methodological problems in the collection of empirical evidence and its analysis.

The characteristics most frequently used as relevant indicators of the changing status of women were: the changes and differentials in the educational attainment, and labour force participation. Both measures had the advantage of being quantifiable; but, in applying them, note should be taken of the qualitative variations. Other characteristics which expressed the changing status of women in society referred to their legal status, participation in political activities or in voluntary organizations, or in both, their role within the family, and so on.

Hitherto, female labour force participation had been found to be negatively associated with fertility in most countries, although conflicting findings had been reported from a few. Availability of family planning advice and of contraceptives seemed to strengthen the association between higher female labour force participation and lowered fertility.

Social security

Social security programmes had had an impact on the tempo of fertility decline, but their effect seemed to be relatively small compared with other social changes derived from economic development and modernization. Furthermore, causal interpretation of empirical findings was by no means straightforward. The contents of such programmes and their forms differed with different social, economic and cultural conditions. Some forms of social security programmes introduced in the region were old age pensions, family allowances and maternity benefits, although the last mentioned had not yet gained wide currency in the region. The assessment of the effects of each of those schemes on population change, however, still awaited more detailed research. Some of the measures might in the short run prove anti-natalist, some pro-natalist and some neutral. In some countries, experimental schemes were being used to test the idea that the guarantee of old age support through savings schemes might act as an incentive to the formation of smaller families.

The social security measures and policies so far implemented had been oriented to urban rather than rural populations, to industrial workers rather than farmers. However, where a system of old-age pensions was extended to farmers and fishermen, as in Japan, involvement of local voluntary bodies in the administration of the system proved extremely beneficial. The impact of social security policies on fertility in those groups might not be apparent in the short-run. In fact, the short-term effect of programmes benefiting those sections of society might even be to push up the birth rate for a period before fertility decline set in. Such had been the experience in the United Kingdom in the second part of the nineteenth century.

Like other desirable social objectives, the development of social security programmes had been retarded by rapid population growth; and only marginal or partial programmes, such as employment injury compensation and sickness benefits, were in force in most countries of the ECAFE region. Finance might be a problem; if, as was common, such schemes were financed by taxes added on to the wage bill, that might encourage employers to adopt capital - intensive techniques of production with adverse effects on employment. Allocation of funds to social security programmes out of proportion to expenditures to promote economic development might create difficulties rather than confer benefits on

society as a whole. In view of the large financial and administrative requirements involved, the policy followed by some countries was to divert only a small part of scarce investment funds to social security programmes.

Education

Governments in the Asian region had made great strides in providing education for children and youth, and had in many cases devoted between 4 and 5 per cent of their GNP to education. For the region as a whole, there had been more illiterate persons in 1970 than in 1960, and more children out of school. Enrolment ratios were far below what were regarded as adequate, and school dropout rates remained high. The massive investment requirements arising from a fast-growing population left little for improving the quality of education. The prospects for the 1970s should cause great concern from that point of view.

In providing for education, it was important to draw the attention of national Governments, and educational planners in particular, to the problems lying ahead of them. The increasing social demand for education and the projected increases in the number of births in the 1970s and the years beyond, even on assumptions of low fertility, were such as to require great effort in the provision of school places and other essential services for education, including the supply of teachers. Those problems, which were serious even under assumptions of low fertility, would be even more formidable under conditions of continuing high fertility. The realization that educational goals were less capable of achievement under conditions of high fertility than under conditions of low fertility was an important one, and it should have the effect of persuading educational planners of the need to lend their support to national programmes designed to bring about a reduction in fertility from their present high levels.

Preliminary studies of the relationship between education and fertility had shown that the threshold above which education had a significant effect on fertility was rather high. An important element in that relationship appeared to be the effect of higher educational levels in raising the age at marriage, and although that effect might be balanced to some extent by higher age-specific fertility rates in ages 25-34 for instance, the net effect would be to reduce total fertility. In view of the complex factors which might enter into those relationships, more detailed studies were required.

Another aspect of the relationship between education and fertility was the extent to which higher educational levels led to greater acceptance of family planning. Some available studies indicated that acceptance of family planning did not depend greatly on educational levels in the majority of the population.

It was felt that action should be taken to introduce programmes of population education at all levels of instruction, within both the formal and the non-formal sectors, so that individuals could obtain an insight into the impact of family size and population growth on the quality of life of the individual and the development of society. Some experiments with population education and family life education were being carried out in some countries of the region.

As educational expenditures could not be greatly increased above their present

levels, educational planners had a responsibility to examine critically the current structures and procedures of education with a view to effecting changes that would result in economies. That, however, was not the only reason for such a re-examination. An even more serious argument arose from the fact that, while the demand for education was increasing, so was the volume of educated unemployment; that had created serious social tensions in many countries. It was necessary, therefore, to plan future educational developments with a view to promoting fuller employment of educated persons. Hitherto, the major part of the expenditures of education had been devoted to the formal school sector, but large numbers were outside that sector. They were important, not merely from the point of view of their contribution to fertility behaviour, but also as potential contributors to the economy of the country, if they could be included in non-formal educational programmes that would enhance their skills.

It was felt that population pressures on educational facilities were particularly manifest in the failure of educational systems to achieve full equality of educational opportunity for such critical groups of society as rural youth and migrants to urban areas, groups which were also likely to be critical in terms of their reproductive behaviour. More emphasis should therefore be placed on designing schemes that would cater to their needs, especially in programmes of non-formal education. In that context, particular mention was made of worker education programmes, education through co-operatives and other community agencies, as well as national youth organizations. A better integration of those programmes with the formal educational system was recommended.

It was felt by some that current arrangements for financing educational expansion out of central government funds might weaken the realization by individuals and local communities of the effect of population pressure on the educational systems. That might be avoided to some extent by alternative arrangements in which local communities would bear a great share in the organization of their educational programmes and in financing them. With such arrangements, however, one must ensure that they did not adversely affect the equality of educational opportunity, irrespective of the economic circumstances of the individuals concerned.

It was widely felt that the educational policies of the countries of the region could play an important part in enabling those countries to cope with the implications of population growth on the attainment of other development goals. In particular, educational policies needed to be reconsidered in order to promote the employment objectives of development. One direction in which that could be done was to stress technical and vocational education, particularly education for agricultural development. The differentials in incomes of workers at different educational levels in the developing countries were larger than in the developed countries, and might be a factor in regarding the absorption of educated workers into full employment; measures to reduce those differentials would not only promote the employment objective, but also lead to greater equality of income distribution, which was felt to be an important development objective in itself.

Recommendations

Governments in the region were following various policies to promote social

development in their countries. The policies were valuable in their own right, but many of them were also important because of their influence on the emerging population trends. Taking note of that relationship, the Conference arrived at the following recommendations:

1. That maternal and child care services, including nutritional and preventive health care for mothers and children, should receive high priority among health expenditures;

2. That some suitable form of social security should be designed so as to provide an incentive to have smaller families;

3. That support should be provided for village-level movements which emphasized family planning and small-family ideals;

4. That national policies regarding social development specifically directed to backward areas and populations should receive high priority;

5. That policies concerning the status of women be developed in directions which would reduce fertility levels;

6. That laws concerning the employment of women be reviewed to discover and remove obstacles and to add incentives to the acceptance of the small-family norm;

7. That, if family allowances were given, the system should be designed to avoid encouraging large families;

8. That the responsibility of providing educational facilities should be distributed between central government authorities and local and regional agencies in such ways as would enable individuals and local authorities to realize the implications of rapid population growth on the cost of educational provisions;

9. That the system of education as a whole should be reviewed in order to promote the fuller employment of educated workers, by appropriate emphasis on technical and vocational training;

10. That programmes of population education should be developed at all levels of instruction, both within the formal and non-formal systems of education, and for that purpose, adequate training should be provided for teachers in population education;

11. That young persons should be trained and recruited into the social services, including family planning programmes;

12. That greater attention should be given to training in community and local leadership;

13. That educational advantages should be provided to the children of employed women;

14. That more research be undertaken on the effect of education on fertility, in view of the complex set of factors involved in this relationship.

VI. FAMILY PLANNING PROGRAMMES

The background papers prepared and the discussions held on this topic, can be categorized under the following three headings:

- (a) Review and assessment of family planning policies and programmes in the countries of the ECAFE region;
- (b) Suggestions for strengthening existing family planning programme components;
- (c) Need for and prospects of "beyond family planning" measures to modify population trends.

The major points of discussion and recommendations grouped under these three areas are summarized below.

Review and assessment of family planning policies and programmes in the countries of the ECAFE region

As of 1971, 25 of the 31 ECAFE member or associate member countries, located in the region, had either official population or family planning policies with national programmes or supported family planning activities through voluntary organizations within the country. The population of those 25 countries constituted more than 95 per cent of the region's population. The common reasons cited for adopting such a national policy were

- (a) economic betterment of the people;
- (b) social development, particularly, in terms of education of the younger generation;
- (c) improvement of family health, with particular reference to health of mothers and children.

In the majority of countries with official family planning programmes in the region, the goals have been expressed in demographic terms as a reduction in either the crude birth rate or in the rate of natural increase. However, the Conference felt that the objectives of family planning should be more clearly stated in terms of the rationale behind the choice of specific demographic and family planning goals and their implications for economic and social development. family planning goals and their implications for economic and social development.

Several countries had attempted to convert the demographic goals into intermediate operational targets such as annual acceptor targets. The acceptor targets were based on the estimated number of births to be averted for a specific reduction in fertility and converting the same number to number of contraceptive users and acceptors needed year to year. The family planning goals and targets, if they had been formulated, formed the basis for establishing the organizational and administrative structure of the programme and allocation of necessary financial and other resources.

Administration of national family planning programmes in the ECAFE region was normally entrusted to an existing executive department, such as the ministry

of health, or fell under the responsibility of a new independent agency in the form of a commission or board which was outside the regular executive branch of government but directly under the chief executive. Most of the countries had adopted the first type, but the second types seemed to be prevalent in those countries where non-governmental family planning activities had been and continued to be prominent. The task of the commission or board in those countries was not only to formulate the national family planning programmes but also to co-ordinate the activities of the various organizations participating in the national programme. At least one country in the region had left the responsibility of organized family planning activities essentially to a private agency, though with its tacit support.

The programmes under ministries of health were mainly executed as an additional function undertaken by the public health network. Some countries were trying to integrate family planning into the health services. Usually, the ministry of health was assisted by other bodies, such as the ministry of education and/or of social welfare, information and community development agencies, as well as by private family planning agencies especially in the field of training, motivation and information.

To encourage family planning acceptance, some countries had removed legal obstacles or liberalized them, for instance by revising the legal provision to allow the importation, manufacture and supply of contraceptives. Recently, abortion had become either legalized or liberalized in some countries, but it was not to be regarded as an alternative to family planning. In a number of countries, the legal basis for surgical sterilization had also been provided.

In assessing the programmes and policies, the following questions related to the impact of the programmes were examined:

(a) whether such programmed efforts (input) were related to programme acceptors (output), and whether that relationship was influenced by the socio-economic conditions in the countries;

(b) to what extent such programme acceptors contributed to the fertility reduction;

(c) whether the countries with national family planning programmes had actually had a declining trend in fertility over the years.

During the previous decade, national programmes in the ECAFE region had provided contraceptive services cumulatively to a total number of 36 million married women in the reproductive age groups (15-44 years). The programmes had recruited, on an average, between 1956 and 1971, three to four new acceptors annually out of 100 eligible women. There were considerable differences among the countries. The cumulative proportion of contraceptive users, as a direct contribution of the programme, was within 20 per cent for most of the countries of the region.

Studies indicated that, in those countries where there were stronger, extensive family planning efforts and ready and easy availability of contraceptive services and information through the public and private sectors, the acceptance rates tended to be higher. For instance, the number of acceptors was highly

correlated with manpower input, as estimated by the number of personnel-years of family planning workers deployed in the programme.

The programmes seemed to have had a widely differing impact on the fertility levels in the countries. The strength of the impact seemed to be related not only to the inputs into the family planning programmes but also to the socio-economic conditions of the country and to improvements therein. Consideration should be given both to family planning programmes and to processes of modernization in evaluating the impact of either on fertility.

Suggestions for strengthening existing family planning programme components

A. Administration and management

The Conference emphasized the following criteria for good family planning services:

- (a) accessibility - to the individual at the time and place where he or she needed such services;
- (b) continuity - providing adequate referral services and follow-up care;
- (c) quality - ensuring acceptability by the clients; requiring standards of education and training of staff relating to standards of performance, thus necessitating the need for supervision and in-service training;
- (d) efficiency - organization of the use of various inputs in the most effective and economical manner.

The challenge seemed to be how best to make the benefits of existing knowledge available to the community.

The Conference emphasized that family planning management required special skills. Family planning administrators should have a multidisciplinary outlook and the ability to make pragmatic decisions. They should be able to win the co-operation and support of medical and paramedical personnel, social and voluntary workers, planners and demographers as well as other administrators in central and subnational levels. There was need for innovations in administrative techniques to improve the efficiency and effectiveness of programme operations. The Conference noted the shortage of skilled administrators in family planning programmes and emphasized the need for training in management skills.

B. Training and manpower

The Conference recognized that "manpower" related to the whole structure of services: from top-level administrators and professional personnel to the temporary field worker. High attrition rates leading to wastage and lack of continuity of personnel had created serious problems in many family planning

programmes. The Conference emphasized the need to provide security of employment for family planning workers, monetary incentives and proper training including training in supervisory and management skills. There was also a need for survey of manpower and analysis of tasks associated with the job, with a view to assigning appropriate tasks for each level of worker; and a need for the creation of a career structure by each country for personnel working in family planning programmes.

Adequate attention should be focused on the nature and content of training courses as well as the appropriate methods of training for family planning personnel. Of special importance was training in supervisory and management techniques. Attention should also be directed to problems of releasing personnel from service duties for the purpose of training. It was pointed out that proper selection in staff recruitment together with job-oriented training could overcome attrition to a great extent by providing job satisfaction.

C. Education and information

While the mass media had met with success in certain areas, by themselves they were not an effective means of increasing family planning acceptance, though they were useful in creating awareness of population problems, in legitimizing discussions in family planning and contraception and in negating rumours. To increase family planning acceptance, mass media should be used together with other methods, such as community education and person-to-person approaches. It was felt that adjustment of education and motivation techniques to cater for specific target groups, e.g. decision-makers, traditional leaders, younger age groups, low-parity couples, industrial and plantation workers, armed forces personnel, medical and nursing personnel, were important. The need to utilize interested and influential community leaders in the educational and service aspects of the programme was emphasized. Methods for identification of such leaders in villages, motivating and training them for appropriate participation in the programme should be developed by each country on the basis of its social and cultural background and after needed action-research.

Developments in other welfare areas, especially in nutrition and general health care, could improve the child survival confidence level, which would facilitate family planning acceptance. Communication messages using those appeals must be supported by material inputs from the health sector to make the messages fruitful. Such inputs would also provide strong motivation to family planning acceptance. Emphasis should be put on a community-based approach.

D. Services

Many family planning programmes were making use of existing health services and tended to be clinic - or hospital-based. The main problem in ECAFE countries lay in the rural areas. There was need, therefore, to explore new ways and means of reaching the rural population, such as making use of midwives and other paramedicals for distribution of contraceptives after necessary training, and providing the workers with transport facilities for travel in rural areas. It was pointed out that the integration of family planning with health

services could best be handled by each country taking into consideration the stage of development of health services, administrative structure, availability of voluntary efforts in family planning, etc. Moreover provision of family planning services should not be withheld because of the absence of minimum levels of public health or maternal and child health services in certain areas.

Attention should be focused on the possible role of indigenous medical practitioners and traditional para-medical personnel. Consideration should also be given to factors such as accommodation for personnel, drugs, equipment, transport and other facilities.

It was mentioned that more use could be made of traditional methods of contraception along with information on basic reproductive physiology. Even in those developing countries of the ECAFE region, where fertility remained high the rates were well below the biological maximum. The traditional methods of contraception had been used effectively to reduce fertility in many societies and action research should be encouraged in that field.

Commercial channels for the distribution of contraceptives should also be explored. The highly successful distribution of condoms through commercial channels in one country in the ECAFE region was mentioned. The possibility of distributing them elsewhere by those means should receive serious consideration.

In view of the urgent need for developing guidelines for family planning administrators and development planners for improving the efficiency and effectiveness of family planning programmes, there was an urgent need to promote action-research on various strategies of programme implementation in the countries of the region. There was also a need to give consideration to the implementation of the so-called "beyond family planning measures" for achieving the demographic goals. Research should be undertaken to explore the extent to which family planning services could be integrated with other social and welfare services.

E. Research

The Conference felt that research in the field of physiology of human reproduction should be intensified further. There had been no real breakthrough in the discovery of new contraceptive methods, in the sense that they could be taken up immediately in national programmes of family planning. IUD's and oral pills were essentially discoveries of the late 1950s and early 1960s. However, research in respect of some new contraceptives and improved variations of the existing ones were reported to have had encouraging results.

There was need for research to discover simpler and better methods that would be highly effective yet reversible at will; as well as being aesthetic, not requiring repeated action, special care or follow-up; and cheap or acceptable to all.

Research in human reproduction should be focused on the following areas:

1. Ovulation detection, especially in relation to the rhythm method of birth control.
2. Methods for regulation of implantation of the fertilized ovum.
3. Regulation in the male of the fertilizing ability sperm.
4. Regulation of sperm migration and survival in the human female.
5. Development of early abortifacients.
6. Hormonal suppression of ovulation by long-acting oral or injectable steroids.
7. Hormonal post-coital contraceptives.
8. Easier and safer methods of male and female sterilization and re-anastomosis.
9. Acceptability profiles of existing and potential methods of fertility control, including traditional methods.

In promoting action-research, it was felt that the existing research institutions should be encouraged and helped to undertake further research, in preference to attempting to build new institutions, so as to save expenditure on capital investments and time. The Conference was informed of the willingness of one country to provide financial assistance in the region.

F. Evaluation

Systematization of evaluation of family planning programmes through collection and analysis of service statistics data, follow-up studies of acceptors, and sample surveys of communities was vital for the success of the programmes. In assessing the impact of the programmes on fertility, the Conference felt that the following two factors should be taken into account: (a) the prevalence and effectiveness of contraceptive practice sustained outside the programme and (b) the extent of substitution of methods by acceptors between programme and non-programme methods.

The Conference noted the report of the expert group on the socio-economic returns of family planning programmes organized by ECAFE in June 1972 and its recommendation that family planning cost data be maintained in three broad categories of overhead, supporting and operational costs.

It was accepted that the general growth models so far developed were not yet adequate to describe the full consequences accruing to the economy as a result of a given decline in fertility and that recent modelling had suggested that the benefit of reduced fertility in terms of **per capita** output was not independent of other developmental activities.

It was agreed that, despite such limitations, countries should undertake

cost-effectiveness studies and cost-benefit analysis of their family planning programmes on a scientific and systematic basis to indicate the efficiency of on-going programmes and attempt to assess the possible benefits in economic terms at the household and social levels.

Need for and prospects of measures beyond family planning

Despite the multifarious possibilities strengthening existing family planning programmes, there emerged a general consensus that, in many countries of the region, even greatly improved family planning programmes might hold out only limited prospects for an early and rapid reduction of fertility levels. Thus, when pressing economic and social considerations made such a reduction a desirable social objective, policymakers should examine the feasibility of policy instruments whose effectiveness went beyond family planning as conventionally defined. Obviously, the mere technical feasibility of certain measures that could induce rapid fertility decline or accelerate a process already under way, was not a sufficient condition for adopting such measures. A viable policy must also withstand the test of political and ethical acceptability; in other words the social costs attached to the policy should be more than counter-balanced by the expected benefits. In each country there existed appropriate political mechanisms through which such a social judgement could be achieved.

For the purposes of the discussion that followed, family planning programmes as conventionally defined were understood to consist essentially of two main components. One element was the free or subsidized provision of knowledge and methods of birth control for couples wishing to utilize such services. Such a "supply-oriented" approach ideally would have the result that all births would be wanted by the parents, in other words that unwanted fertility on the family level would be eliminated. A second element sought to affect the demand for family planning services through population education, i.e. through efforts to communicate to potential parents the norms of fertility behaviour considered socially desirable.

Both policy instruments might, in any given situation, be insufficiently developed and hence fall short of their potential in terms of effectiveness in influencing fertility. Promising possibilities of improving the programmes had been discussed in the Conference's earlier deliberations. However, it was realized that even the best-designed family planning programme package might be insufficient to achieve the socially desirable level of fertility; chiefly because parental decisions, implicitly or explicitly, were made with reference to the immediate environmental stimuli as perceived and experienced by individual parents and did not normally take into account the costs (or the benefits) their actions would impose on others in society. Thus the sum of voluntary individual actions with respect to reproduction might not add up to a social optimum; indeed it would add up to such an optimum only by accident. Education and persuasion alone were likely to be insufficient to resolve such a conflict between individual and collective interest. Governmental action to influence fertility beyond the framework of mere provision of means of birth control methods and population education might therefore be deemed desirable. Those considerations were reinforced by the fact that certain factors - e.g. the shortage of trained personnel or the costs of effective delivery of services - limited the

capacity of the countries in the region to develop fully adequate family planning programmes, at least in the short run.

Since governmental interference with individual fertility behaviour by means of direct coercive measures was likely to be ruled out by the political process, the common feature of measures beyond family planning was the manipulation of the rewards and penalties attached to parenthood by the Government, so as to induce individual behaviour that more nearly conformed to social interest.

It was recognized that a modification of pressures inducing individual parents to limit their fertility and a more or less simultaneous modification of fertility norms that facilitated behavioural change were generated by the general process of economic and social development. Thus Governments, by pursuing policies aimed at economic and social development, could be said *pari passu* to be pursuing a powerful demographic policy outside the scope of family planning. But such an all-embracing definition of population policy was not particularly helpful, as it merely reflected a truism. Moreover, the general relationship between development and fertility behaviour was not rigid; in the past fertility declines had been associated with widely varying degrees of economic and social development. Therefore a task which policy-makers faced was to identify those particular elements within the over-all process of development that could be most effectively utilized as a tool in the realization of specific demographic objectives.

Discussion centred on the types of measures and approaches that appeared most promising in that regard. Those measures included both positive incentives and negative sanctions. Examples of positive incentives were the provision of rewards - either monetary payments or payments in kind to those who adopted or continued to utilize contraceptive methods, or to those willing to be sterilized or to bear no children for a specific period of time. It was felt that the potentials of incentive measures such as those should be fully exploited.

Negative sanctions or disincentive measures included such items as reversal of taxation benefits, withdrawal of maternity benefits and of child endowment, direct tax on births, and the exclusion of large families from housing schemes, etc. The Conference felt that each of those measures should be carefully studied in relation to their effectiveness, the proportion of population affected, and their social, economic and political implications. Due consideration should also be taken of the legal aspect especially with reference to the Declaration of Human Rights. It was generally agreed that the existing legal systems of each country should be examined with regard to their impact on fertility.

In view of the experience of past demographic transitions that indicated the importance of the bearing of parental responsibility for the upbringing of children, some expressed the opinion that social policies aimed at strengthening and enforcing such responsibility would be essential for inducing and accelerating the requisite behavioural change for fertility reduction. Such policies in the short run might conflict with other desirable social objectives such as a more equitable distribution of income. However, policy measures to resolve such conflicts might often be feasible. The view was also expressed that, when some of the costs of bringing up the new generation were collectively

shared, such sharing should be arranged in ways that would not diminish the material interest of families or small communities in reducing fertility, but would permit the capturing of a major share of the benefits from fertility reduction by those who were responsible for the reduction. Placing increasing responsibility for the bearing of certain population generated costs on decentralized units of the Government was mentioned as an essential step in that direction.

It was observed that innovation of and experimentation with some of the measures beyond family planning was very desirable; but that due caution should be exercised in such experiments because the full impact of those incentive or disincentive measures was largely unknown.

It was argued that imaginative integration of socio-economic and development policies with measures incorporated in current family planning programmes represented a qualitatively different and more effective policy than the two approaches treated in isolation. Policies for the strengthening of the current family planning programmes or for the devising and adoption of measures beyond the conventional programmes should be designed in conjunction and in coordination with other socio-economic developmental programmes. In some countries, the problem might be interrelated with the concentration of people in big metropolises; in others, it might be the disproportionate distribution of income, properties or land. Still other countries might find that the educational levels of their population were too low for them to accept rapidly the ideas of family planning. In view of the interrelations of factors and the special characteristics of each country, national policies concerning spacing and limitation of births should be designed specially for each country and should be coordinated with other socio-economic plans so that they would complement each other.

Recommendations

1. The Governments of developed and developing countries should encourage and support small family norms, taking into account the demographic situation and policies of each country.

2. The present efforts by national Governments in family planning programmes should be intensified and expanded to reach as many eligible couples as possible within the minimum possible time.

3. Short-term and long-term training programmes should be organized in the countries of the region to train family planning administrators and decision-makers in management skills.

4. A comparative study should be undertaken of the curricula and teaching methods for training courses related to demography and family planning in order to evolve more effective short-term training programmes.

5. The use of commercial channels for the dissemination of family planning information and contraceptive supplies to eligible couples might be considered.

6. Evaluation studies of the extent and effectiveness of contraceptive practices outside the national programmes were required.

7. Assessment of the extent of substitution of different methods of family planning by couples was needed.

8. These should be systematic evaluation of family planning programmes through scientific collection and analysis of service statistics, follow-up studies of acceptors and sample surveys of communities.

9. Encouragement should be given to action-research in selected areas (especially rural) in different countries for experimenting with and evaluating different approaches to educational and service aspects of family planning programmes.

10. Cost-effectiveness studies and cost-benefit analysis of family planning programmes, to improve the efficiency and effectiveness of programmes on a scientific and systematic basis, should be encouraged.

11. Consideration should be given to undertaking studies of the existing legal systems in each country to assess their impact on fertility.

12. Studies of the extent of optimal mix of family planning services with other social and welfare services, such as health and education, are required.

13. Each country should evolve possible incentive schemes to couples, communities, local and state Governments for expediting the realization of demographic goals.

14. Further research was needed into the physiology of human reproduction with a view to developing a more effective, cheap and acceptable method of contraception.

VII. ECOLOGICAL IMPLICATION OF RURAL AND URBAN POPULATION CHANGE AND OF POPULATION TRANSFERS FOR DEVELOPMENT PLANNING

The close interrelation between population growth and distribution on the one hand and environment problems on the other had been recognized as a problem area by the First Asian Population Conference in 1963 and considered at the global level by the United Nations Conference on the Human Environment held at Stockholm in June 1972. The need for such concern in 1972 was underscored both by the demographic developments since 1963 and by the growing body of evidence testifying to the further deterioration of environmental conditions.

Reduction of information gaps

Although environmental disruption had become of serious concern to policymakers and to the general public in the last few years, investigation of the ecological relevance of the regional distribution of population had relied on limited evidence from individual studies which usually lacked the generality required for broader application. Sometimes the evidence presented was speculative.

Full assessment of the interrelation between population and environment required good, basic data. In view of the serious shortcomings of the data essential to full evaluation of the relation between rural-urban population distribution and environmental conditions, concerted efforts to improve data collection and analysis procedures were needed; fuller use should also be made of the available data through intensive tabulation schemes for the census and sample surveys.

There was a special need to improve population projections, since environmental planning required good estimates of the future size and rural-urban distribution of population.

The significant gaps in information on the interrelationships between population and environment called for intensification and broadening of training on a cross-disciplinary basis.

Population pressure and the rural environment

Expanding urban populations encroaching on agricultural land and water catchments increased pressure on land resources. If agricultural production was not sufficiently labour-intensive to employ an expanding rural labour force, and rural-urban migration was limited, then that form of pressure on land, water and associated natural resources was likely to increase.

The resulting intensity of competition for land was exemplified by the pressure on forests in densely-populated countries, with the need for extra land for food production competing with the need to preserve or expand forest areas for water catchment, wildlife preservation, timber supplies, and so forth.

Irrigation could cause drainage and salinity problems, and chemical pesticides, since they persisted in the environment, might have adverse effects on other components of the natural ecosystem.

The new technologies used in agricultural production might upset the traditional social environment of a subsistence economy, as well as the physical-biological environment. For example, commercial cash cropping disturbed such institutions as the extended family and traditional clan ownership of land.

It had become necessary, therefore, for planners to consider the social and ecological consequences of development programmes. Governments should influence private decision-makers to take fuller account of the results of their activities and to behave in a socially more nearly optimal manner.

The need for land-use planning

In view of the intense competition for land in densely-populated developing countries, it was evident that a rational approach to land use was needed.

A planning approach was proposed whereby the first step would be national land use capability surveys based upon geological, pedological, hydrological, minerological data, and so on. On the basis of such surveys, a system of broad national zoning should be carried out, founded upon the most likely best uses of the land. It was pointed out that the recently announced proposals by the Government of Japan for effecting a redistribution of the population and decentralization of industries were in fact based upon a land use survey.

The need to explore alternative technologies

There was also a need to explore technologies (including new technologies) which would make better use of renewable as opposed to non-renewable resources. Reafforestation was proposed as a method of alleviating a number of environmental problems, while at the same time providing substantial employment and a renewable resource, the uses of which might be greatly expanded.

Planning approaches

Much of the developmental planning undertaken in the ECAFE region took into account social costs and benefits, including those involved in environmental deterioration. However, difficulties of measurement often made recognition of ecological factors implicit rather than explicit in planning. Cost-benefit analysis was an example of a planning technique which made explicit provision for extra-market effects of that type.

It was strongly emphasized that consideration of ecological problems on an exclusively rural, or urban, or political unit basis was not appropriate. As far as possible, planning should be carried out for areas determined by ecological, rather than political or geographic, considerations.

It was suggested that systems analysis (simulation techniques) should be

more extensively used for planning in the region, since the systems analysis technique involved explicit integration (via interactions specified in the system model) of demographic, physical-biological, economic and social factors.

It was emphasized that, when planning on a project basis, in addition to taking into account environmental and social implications, it was also necessary to implement plans in a careful manner and to plan for succeeding uses. In Papua-New Guinea and Indonesia, detailed plans were made for use of the land after it had been cleared, and forestry companies were required to conduct their operations to conform with those plans.

The indigenous population affected should take part in the planning process. For that purpose it was necessary to employ highly trained local people and to involve all local educational and research institutions. Thus, maximum participation by the people with the maximum stake in the outcome and the maximum knowledge of and concern for the local environment would be ensured. It was also pointed out that, since the concern was with people, planning should not be exclusively the province of technologists, economists and administrators, but should also involve sociologists and social workers competent to consider the social environment created by plans.

A distinction should be made between densely and relatively sparsely populated regions and countries, since the natural environment did have a capacity to cope with moderate levels of use of many modern technologies.

Policy

For most countries of the region, the development of policies and programmes designed to control urban growth and location had either not begun or been just recently initiated. But effective policies depended on efficient planners and an awareness by the general public of the need for them. Additional training of government officials and the education of the general public were considered, therefore, a key goal for the immediate future. Use of both the communication media and formal education in the school systems was advocated. They must give increased consideration to the desirability of slowing rates of urban growth, especially that of big cities, and/or of producing a more balanced distribution of the urban population through development and dispersal to smaller cities.

The experience of Japan and other countries had demonstrated that lower rates of population growth in themselves were not sufficient to reduce or eliminate environmental deterioration, particularly in countries already characterized by high population density. Attention must, therefore, also be given to the need for policies designed to change the pattern of rural-urban population distribution. In that connexion, it was stressed that efforts to solve the environmental problems of urban and rural places required an integrated approach to the development of both. Possible programmes included those leading to the rate of growth of big cities by channelling migration to smaller cities and towns, including new ones, and by inducing and making it feasible for people to remain in rural places. The role of big cities in development, however, was recognized and the desirability of improving their infrastructure was emphasized.

Among the specific suggestions reviewed by the Conference for slowing urban growth and achieving more diffused patterns of urban settlement were decentralization of industry and creation of industrial estates, improved transport systems, establishment of new towns, creation of "service centres" to provide groups of villages with processing industries and various social, cultural, economic, recreational, and administrative services, thereby giving the population access to a number of amenities associated with urban life.

A number of suggested policies were focused directly on agriculture, intended to relieve environmental and other rural problems and, in so doing, to relieve the urge to move to the cities. They included land reform, irrigation, improved soil fertility, increased investment in rural education, housing and social development in general, differential systems of taxation, and industrial location in rural areas. It was noted that the "green revolution" had significant implications for the future volume of rural-to-urban migration, but that available evidence was still insufficient to indicate whether it would reduce or accelerate the rate of the rural exodus. The effect might well differ over the short and long runs.

The Conference emphasized that rural development designed to improve the quality of village life might itself bring new environmental problems to rural areas. Decentralization of industry carried the threat of polluting the rural atmosphere and upsetting the crop cycle and environment. Irrigation projects might lead to soil erosion, loss of soil nutrients and fisheries. In short, the very efforts to achieve rural development both as an end in itself and as a means of alleviating some of the problems of cities might create or exacerbate environmental problems in the rural areas.

Moreover, by contributing to environmental deterioration in rural areas, such development might, in turn, increase the rate of movement to cities rather than reduce it. Irrigation projects might lead to displacement of population and rural exodus. More education and greater access to mass communication media might stimulate rural out-migration unless the programme were specially geared to rural life and opportunities. To avoid the possible negative consequences, development planning should ideally move ahead simultaneously and in an integrated fashion for both rural and urban places, and the ecological implications of development programmes should be assessed before the plans were implemented.

Most important was the recognition by the Conference that proposed policies intended to control migration and urban growth gave no assurance of success. Current knowledge of the dynamics of the complex processes was still inadequate to permit identification of the most appropriate means for achieving desired goals. As far as possible, the experience of countries which had tried certain policies should be evaluated. At the same time, basic research was needed on factors influencing the volume, direction and motivation of migrants and other variables affecting the success or failure of efforts to influence urban growth patterns.

It was also pointed out that ecological problems could not be dealt with in terms of exclusive reference to Asian countries. There were reasons to believe

that ecological imbalances had largely arisen from the very high rates of growth in the highly developed and industrialized economies of the day. The continued high rate of growth of demand for primary resources emerging from those countries posed major problems on a global scale.

Recommendations

1. ECAFE should sponsor a comparative survey of selected cities and densely populated rural areas in the region in order to assess the recent trends in migration and urbanization and obtain a clear picture of the emerging issues in the context of the increasing deterioration of the human environment. As far as possible, there should be standardization in regard to questionnaires, tabulations and analyses. In the absence of such a survey, there was a tendency to generalize on the processes of rural-urban migration and urbanization on the basis of the experience of the developed countries in the West.

2. In terms of action programmes, all countries in the region should have population and urban planning units in the national planning commissions or in other appropriate departments of the Governments where such units did not exist. The minimum staffing pattern suggested for such units included economists, demographers, sociologists, town-planning oriented administrators. However, it would be best if environmentalists and specialists from other disciplines were also included in their staff.

3. The preparation of a comprehensive inventory of urban policies and programmes in the different countries of the region would facilitate a better understanding of the problems of urbanization and also reveal why some urban development plans had not been effective.

4. In view of the extremely limited information on the interrelationship between population and environment, a series of well-designed and scientific surveys should be launched to give an insight into the whole range of problems concerning urban growth, migration, pollution, urban infrastructure, city-land relationship, regional planning, etc. A number of surveys limited in scope were also needed; for example, a survey of the fertility levels of migrants to cities.

5. Some theoretical work had been done in the field of the economics of location and also regional planning, but the gap in current theoretical knowledge of the gamut of relationships involved in the process of integration and balanced regional development was considerable. ECAFE should ask experts to look into those theoretical issues, including the construction of appropriate models of migration and urban development.

6. All countries in the region should undertake comprehensive inventories of natural resources, especially land use capability surveys, giving priority to those areas where population pressure on available land, water and other natural resources was greatest, e.g. the rural-urban fringe and the most densely populated rural areas, especially those areas where the "green revolution" was leading to more intensive use of fertilizers, agricultural chemicals, irrigation water and agricultural machinery.

7. Recognizing that knowledge of the physical-biological effects of intensive use of modern agricultural inputs in an Asian-type agriculture was almost non-existent, ECAFE should sponsor basic physical and biological research in the region designed to explore the effects of intensive input use on the rural environment, concentrating on the identification of critical intensities of resource use which led to irreversible environmental deterioration. Such research was particularly urgent in the case of agricultural chemicals, including synthetic fertilizers, in view of the high intensities of input use involved in the "green revolution."

8. Countries and international organizations in the region should give support to research into and experiments with technologies designed to utilize renewable rather than non-renewable resources. In that connexion, regional bodies should give careful attention to reafforestation programmes as one method of emphasizing renewable resources and at the same time arresting environmental deterioration.

9. In order to ensure that actual and potential ecological problems received explicit consideration in development planning, cost-benefit analysis and systems analysis were recommended as techniques which made provision for explicit inclusion of ecological factors. Moreover, it was essential that planners ensured the involvement of the local groups in closest contact with those most affected - planning from the "bottom up" as well as from the "top down."

VIII. RESEARCH AND TRAINING AND THE DISSEMINATIONS OF INFORMATION AND KNOWLEDGE ON POPULATION MATTERS

Research and training of personnel and the dissemination of knowledge and information on population and related matters formed integral parts of the strategy of tackling the problems of population growth prevailing in the region of Asia and the Far East. The Conference considered them under three heads.

- I. Research and training in the general field of demography
- II. Research and training in the field of family planning
- III. Dissemination of information and knowledge of population matters.

Both sessions of the Conference had raised the need for research as a necessary base for, and a continuing part of development. The number of issues on which research could be carried out was very large. Effective research, however, required effective training, which was usually a slow and laborious process for the trainee. It was frustrating for policy-makers to have to wait for an adequate supply of fully trained staff. Hence readily available research findings under similar, if not identical, conditions were a great asset. Therein lay the importance of dissemination of already available information and knowledge on matters related to population. That information and knowledge, though perhaps originally designed to answer questions in a different context, could nevertheless be a valuable aid to policy, because policy formation and implementation could seldom await the gathering of complete knowledge. The administrator was forced therefore to act on imperfect knowledge.

I. Research and training in general demography

Since demography was a multidisciplinary science based on quantitative methods and analysis and closely related to the disciplines of statistics, mathematics, economics, sociology, anthropology, psychology, and the like, it was useful to the demographer to have a working knowledge of as many of those subjects as possible. It was emphasized that the professional demographers should have specialization in at least one of the related disciplines and a thorough knowledge of basic demographic analysis.

As a part of demographic training, analysis of statistical data became important especially when the data were poor. Hence some training in mathematical statistics was often necessary, though perhaps not always indispensable. There had been instances of excellent demographers specialized in different disciplines.

There was a need for different levels of training of demographers in the region. The best utilization of demographers had been found at the lower and middle levels where the main requirement was a basic degree. Governments should consider utilizing the full capabilities of the highly trained demographers in the region. That would require better co-ordination and co-operation between the demographers and the training institutions on the one hand and the administrators on the other. The latter had to be at the forefront of the implementation

of population policy, but they should be supported by the professional demographers in framing it.

The objective of training at the higher level should be to produce fully professional demographers. In general, training should include exposure to research methods and practice in research; and it should be co-ordinated with research activities and needs in the region.

There was particular reference to action-oriented research which could be readily used for policy and action. However, that would usually serve mainly the short-term goals. Action research had special relevance to the field of family planning and to improving the efficiency of on-going programmes. Simultaneously there was a need for basic research with the objective of shaping the long-term policies on population.

Increasingly, the developing countries in the region came to share similar problems; therefore each would stand to benefit from the experience of others. Accordingly, there was a need for appropriate facilities to co-ordinate the activities at the national and regional levels. ESCAP should assist in the promotion of such activities. One of the ways of handling the problem would be to establish a population journal for the ESCAP region. In the absence of such a publication, the results of demographic work performed within the region did not always accrue to the regional countries and scholars.

II. Research and training in family planning

In addition to the outline for research on methods given under VI, above, the Conference examined the needs for research and studies in family planning programmes. Five broad divisions were identified, along with some specified areas within the divisions. They were as follows:

A. Epidemiological studies:

- (i) birth-spacing;
- (ii) sterility;
- (iii) post-partum and post abortal infecundity and lactation amenorrhoea;
- (iv) spontaneous and induced abortion;
- (v) sterilization.

B. Motivational aspects:

- (i) motivation into participating in family planning programmes, with particular reference to males;
- (ii) the use of incentives and disincentives in motivation;
- (iii) the motivational aspects of measures beyond family planning, social, psychological and legal.

C. Communications:

- (i) communication methods;
- (ii) the message and its perception;
- (iii) pre-testing of communication programmes.

D. Operations and administration:

implementation of management techniques relating to planning, maintaining and evaluation of programmes.

E. Evaluation of programmes.

- (i) definition of criteria and indices for evaluation, with particular reference to acceptance, continuity and effectiveness of different contraceptive methods;
- (ii) service outputs and staff performance;
- (iii) efficiency in terms of cost-effectiveness of different aspects of the programmes.

Those research areas could be considered under two broad divisions: (a) in connexion with countries that needed to provide a service coverage for a community already motivated, and (b) those that had a service system but needed to motivate people to avail themselves of its services.

There was considerable discussion on the need for a balance between basic research and action-oriented research. It was stated that administrators, in their anxiety to implement effectively large-scale action programmes, were desirous of obtaining quick answers to problems, to help them improve the efficiency of operations. Action research must necessarily rely on methods available at the time and, for that reason, it was emphasized that there was a continuing need for research in the field of methodology in the longer term.

Studies were needed both at the national and international levels. The former were of direct assistance to the country where the study was conducted, the latter, in the form of comparative studies, could benefit more than one country. Therefore, research facilities at those levels needed to be strengthened. International co-operation would do much to stimulate both local and national research through strengthening national facilities.

Since much of the research carried out in the ESCAP countries was directed towards strengthening programme operations, administrators would have to indicate their priority areas.

The Conference felt that there had not been adequate appreciation of the contribution that social science research could make to strengthening action programmes.

Special consideration should be given to studies on factors influencing decisions about family size, reflecting the perceptions of the populations concerned, further understanding of the dynamics of social change in different cultural settings; the methods of bringing about social change, and the results of such social change on the welfare of the family as well as on its individual members. It was emphasized that, for such studies, there should be increased use of the research methods of anthropologists, sociologists and other social scientists, so as to carry out studies in depth down to the village level.

The Conference recognized the difficulties with regard to studies concerned with the comprehension of messages used in the educational programmes;

namely, lack of expertise in the research methods used and problems encountered in administering comprehension tests, particularly in the rural areas. Attention should therefore be paid to research into the methodology of comprehension studies adapted for use in the countries of the region.

With regard to the training of family planning personnel, the Conference noted that, while much had been accomplished in some countries, more needed to be done. Areas still needing attention were identified as:

- (i) personnel to be trained — medical doctors, para-medicals, social workers, administrators, and others;
- (ii) availability and training of trainers;
- (iii) training facilities — national and local with more emphasis on the local level — training at home versus training abroad — regional and sub-regional training institutions;
- (iv) duration of training — related to the needs of the trainees as training was largely job-oriented;
- (v) follow-up of trainees — interviewing trainees and their supervisors and administrators — need for refresher training — continuing training.
- (vi) evaluation of training and feedback — to be used in strengthening the training programme;
- (vii) the roles of regional and international co-operation in the different aspects of training.

The Conference gave considerable attention to the evaluation of training programmes. Several issues were raised requiring further study; they related to:

- (i) the best indications for the measurement of the impact of training in the class-room and later in service;
- (ii) the practical feasibility of measuring quality of staff performance with particular regard to personal approaches to the community leadership and empathy;
- (iii) the in-training and in-service attrition rates, their causes and possible remedies.

The Conference laid special stress on the training of trainers, recognizing that the success of a programme inevitably depended upon the quality of staff that could be recruited for the purpose.

III. Dissemination of information and knowledge of population and family planning

Particular attention was paid to the problem of tailoring information to meet specific needs by identifying on-going research at an early stage, by getting the researchers in communication with one another and by setting up national clearing-houses with regional co-ordination.

As a result of careful studies, the following barriers to the dissemination of research findings had been identified:

(a) Lack of support

Funding agencies frequently refused to include dissemination costs in the budget.

(b) Language barriers, with particular regard to the summarizing of research materials

Twenty-four of 60 publications responding to an ESCAP survey on periodicals had reported that they would prepare summaries in English or another language if financial aid were provided. Eleven had indicated that such assistance would enable them to improve their existing services. Studies in the region had shown that some researchers feared that a summary would discourage the reading of the full study. A research report presented to the Conference had indicated that some editors feared that preparation of summaries would make it difficult to meet publication deadlines, also that editorial policy might not favour popularization of research materials.

(c) Intermediaries lacked training

Special training was required to summarize or present research in readily useable form. Most Asian educational institutions did not offer courses in technical or science writing.

(d) Over-dependence on Western methods in both research and dissemination

Fellowships, expert advisers and funding for research and dissemination were usually provided from the West.

The problems of communications were made difficult by the variety of audiences, media and messages to be delivered.

Specific needs which communication could fill were:

- (a) deepening of political commitment;
- (b) broadening the base of awareness;
- (c) strengthening demand;
- (d) translating research findings into readily useable form.

Assessment of dissemination efforts was needed. They should be judged on whether they made people more receptive and better informed and whether they contributed to international goodwill.

There was insufficient communication among Asian scholars themselves. More scholars from Asia should be involved regionally as well as internationally in research.

Researchers should be encouraged to prepare summaries and take responsibility for translation. ESCAP correspondents who were often themselves research workers could play a useful role in highlighting the usefulness of research in other countries.

Collection of information about research findings and teaching through surveys needed planning and co-ordination to avoid unnecessary duplication. Funds for such surveys should be adequate in order to make the surveys effective. Efforts should be made to standardize descriptions of terminology as far as practicable.

Researchers were interested in the methodology as well as the content. A critical appraisal of methods used should accompany all research reports. In countries where researchers were scarce and foreign researchers were doing a substantial amount of the work, problems of the application of particular methodologies might be created. Some countries required that proposals be submitted for advance review and that results be submitted for examination before publication.

With the increasing number of information services needed by researchers, administrators, planners and practitioners, it appeared that no one clearing-house could handle them all. Separate units dealing with, for example, each of the following might be necessary: research methodology, statistical data and behavioural studies.

Recommendations

A. Research and training in demography

1. In view of the significance of the population factor in almost all aspects of social, economic and cultural life in the countries of the region, countries should be encouraged to incorporate population materials in the curricula relating to social sciences in elementary and secondary education.

2. The attention of member countries should be drawn to the Conference's recognition of the desirability of incorporating courses in the field of population within undergraduate studies relating to social sciences in universities and other higher educational institutions of the region, and also to the desirability of establishing courses leading to an advanced level for students wishing to specialize in the field of population.

3. Considerable numbers of highly trained personnel would be needed for the activities recommended by the Conference in the fields of demographic and family planning research. As much as possible of that demand should be met by training at higher levels within the region, and appropriate institutions within the region should be assisted to provide suitable facilities.

4. In the past, a considerable proportion of highly trained persons from the region had been known to seek employment outside the region. Hence, in view of the current shortage and expanding demands within the region, Governments ought do well to consider exploring the possibilities of increasing career opportunities for such persons at various levels in the fields of research, planning, policy-making and other activities.

B. Research and training in family planning

5. There was a need to improve the adoption of family planning practice in most countries of the region. The stage having been reached in most programmes at which it was necessary to understand the factors that influenced decisions on family size, and the dynamics of social change and how such change affected family and individual welfare, studies should be conducted in that area in each country.

6. Considerable resources were being allocated to communication and education for family planning. Attention should therefore be given to the messages that were put out and their comprehensibility. Early research into developing proper methodologies for conducting comprehension tests in different cultural, educational and ethnic groups was desirable.

7. It was necessary to find out the reasons for the high rate of attrition among trained family planning workers in some countries, and to take appropriate steps to minimize such wastage of efforts and resources. Governments could profitably develop a career structure for family planning workers which would ensure opportunities for promotion and security of service.

8. ESCAP was requested to assist member countries in strengthening training in the different aspects of family planning programmes. Particular attention should be paid to the training of trainers and evaluation of training programmes.

C. Dissemination of information and knowledge of population matters

9. International bodies were making laudable efforts to disseminate information and knowledge of population matters, and UNESCO and IPPF had a special project to co-ordinate on a world-wide basis clearing-house services; accordingly ESCAP countries should take appropriate steps to strengthen or establish subregional clearing-house and information services, with due regard to the existing clearing-house facilities in the region.

10. ESCAP should survey the producers and consumers of population and family planning information and knowledge in the region in order to establish priorities for collection, processing and dissemination of such information.

11. In the interests of achieving the widest possible dissemination of research results throughout the region, necessary facilities should be created to assist appropriate translations and publications and the circulation of off-prints and other related materials.

12. Translation into languages appropriate to various countries of the region was essential, though expensive. Establishment of a regional clearing-house for translation was recommended, along with improved in-country services preceded by an expert working group meeting to establish guidelines. The United Nations multilingual **Demographic Dictionary** should be translated into as many Asian languages as possible.

13. Technical and science writing courses should be further promoted in the universities and other educational institutions.

14. ESCAP should take the lead in bringing Asian scholars, policy-makers, and programme officials together to discuss innovative approaches to the collecting, translation, processing and dissemination of information and knowledge suited to Asian conditions, with the goal of motivating them towards improving the dissemination of such data.

15. The ESCAP secretariat was urged to continue its assessment of the functions of various agents in the collection, processing and dissemination of popular information.

16. Curricula for basic education of researchers should include attention to their responsibility for disseminating the results of their research.

17. The secretariat should explore the possibility of issuing a regional professional journal in the field of population to meet the needs of the region as a whole.

18. Every effort should be made to collect from research institutes and Governments of member countries, bibliographical inventories related to population.

19. Adequate funding should be obtained to strengthen the useful work of ESCAP's network of population correspondents.

IX. REVIEW OF AND PROSPECTS FOR INTERNATIONAL CO-OPERATION IN POPULATION POLICIES AND PROGRAMMES

U Nyun, Executive Secretary, in addressing the Conference, stated that problems of population were recognized as concerning primarily the interests of nations individually, but the existence of areas of common concern could not be overlooked, especially in the face of the rapid population growth in a number of countries where resources were relatively limited.

Current activities and the prospects for future action were particularly relevant in view of the increased capacity of the United Nations system to give assistance to countries as a result of the establishment in 1967 of UNFPA and the growth of its resources through voluntary contributions by countries, from \$US7 million in 1970 to nearly \$US40 million in 1972. Those funds were available for projects related to all aspects of population, including family planning programmes in developing countries. An analysis by OECD described assistance from a variety of sources, including donors from outside the region and private foundations. The Executive Secretary expressed gratitude for such assistance and invited continued and increased funds, technical assistance and expert collaboration.

Intergovernmental bodies outside the United Nations sphere as well as non-governmental bodies had also given support in a variety of ways to activities in the field of population in the region.

It was necessary to stress, too, that certain countries of the region had given valuable bilateral assistance. Japan ranked high among them and, notable among its contributions, had been the support given to the Asian Statistical Institute, an annual seminar on family planning for participants from the region, and various other training activities, including seminars specific to particular countries. Other countries in the region were willing and anxious to assist according to their resources.

The Conference expressed satisfaction with the expanded work programme of ECAFE in the field of population, which had grown out of the recommendations of the First Asian Population Conference. ECAFE should continue to be the focal point in the dialogue among countries in the region in the population field and in the dissemination of population information. There were a variety of needs corresponding to the varying circumstances of the countries of the region; nevertheless, family planning programmes responded directly to the situations of the majority of countries in the region, and ECAFE's work in family planning and in the highly relevant field of the relation between population and agricultural change was welcomed.

The following guidelines were suggested for the effective extension of international co-operation in the region:

- (i) ECAFE, with interested organizations of the United Nations system, should continue to collaborate with and assist in the implementation of

- population policies and programmes in the region.
- (ii) ECAFE and collaborating bodies should co-operate with countries, at their request, by assisting them to set up and develop the institutional framework for population policy formulation.
 - (iii) The extension of UNFPA's system of country co-ordinators, together with UNDP's newly instituted system of country programming, should help to prevent duplication of effort and measures which were not mutually supporting. The Conference noted with appreciation the steps already taken by UNFPA to increase its administrative capacity to respond more effectively to requests for assistance from ECAFE member countries.
 - (iv) That system, with appropriate assistance from other bodies — inter-governmental and non-governmental — should aim at the integration of population policies into over-all economic and social development planning, implying an interdisciplinary approach.
 - (v) In the absence of any possibilities of a better distribution of the existing population over the globe as a whole, each country will have to work out its own population policy, taking into account its own size, resource endowments and access to trading opportunities in foreign markets.
 - (vi) Improved understanding of the interrelations between demographic, economic and social factors would provide a more complete conceptual framework for the formulation of population policy.
 - (vii) A comprehensive system of demographic accounting supplementing the standard national accounting system would permit a better approach to development planning.
 - (viii) Consideration should be given to economy in the use of scarce qualified personnel in all fields related to population, including demographers in the strict sense, statisticians and family planning personnel.

Greater efforts in international co-operation were recommended in the following fields:

- (i) Assistance in data collection and analysis, with dissemination of results in easily usable form.
- (ii) Training of demographers and specialists in related fields, with emphasis on persons from the region wherever practicable.
- (iii) Intensification of research in bio-medical areas which could lead to the development of effective family planning methods which would simultaneously promote the welfare of the mother and child.
- (iv) Continuance of the system of seminars and workshops, making them as practical and action-oriented as possible; joint sponsorship by two or more agencies was considered valuable.

It was further suggested that:

- (i) Documentation should be kept to the minimum, with reports largely action-oriented in accordance with (iv) above.
- (ii) The content of training and advisory services should include attention, but not necessarily exclusive attention, to family planning evaluation of programmes, servicing, administration and management.
- (iii) ECAFE should convene meetings every two or three years of officials

concerned, especially those responsible for family planning programmes, for examination and review of policy and problems related to population in the region.

- (iv) Information activities and communication techniques for a wider dissemination of information relevant to the demographic situation in countries of the region should be emphasized as essential elements in creating greater awareness of all aspects of population policy.
- (v) Clearing-house activities are a useful adjunct to the work of ECAFE, and translation into additional languages, where necessary, would improve the effectiveness of that work;.
- (vi) The Population Division of ECAFE should be strengthened to enable it to carry out its functions as the focal point for regional activities in population, and also to monitor and follow up the Conference's recommendations. ECAFE's Population Division, the Research and Planning Division and other sectoral divisions, should relate closely to one another in order to ensure that population factors were taken into account in all sectoral programmes and planning. The population units of regional branches of the specialized agencies should also be strengthened.

The Conference noted the relevance of its deliberations and conclusions to the World Population Conference, 1974, and to the World Population Plan of Action currently being formulated as part of the agenda of the world meeting. It requested that its recommendations be conveyed to the World Population Conference as Asian contributions to the solution of problems of population and development for consideration for application elsewhere; and it expressed the wish that funds be provided for publication of the report in suitable form for presentation to the World Conference and for widespread distribution to all interested persons and organizations.

DECLARATION OF POPULATION STRATEGY FOR DEVELOPMENT

The Second Asian Population Conference

Having considered the necessity of formulating population policies and programmes as integral parts of the social and economic development process,

Recognizing the urgent necessity of succeeding in efforts for economic and social development for the benefit of the countries and the greater welfare and happiness of all the peoples of the ECAFE region,

Recognizing the human right of every couple to determine freely and responsibly the number and spacing of their children and the need to ensure their access to information, education and the means so to do, no matter what their financial or social condition,

Recognizing further the social and economic impact of individual family size on societies, and considering it appropriate for Governments to take social and economic measures, in addition to family planning programmes, that will make a smaller family more acceptable and beneficial to the individual couple,

Giving full recognition to national sovereignties and to the need for each country to consider the establishment of goals and programmes for an effective control of the growth of population in the light of individual national conditions and policies,

Reaffirming the importance of integrating population into the development strategy of the Second United Nations Development Decade,

Taking note of the Stockholm Declaration and stressing the impact that rapid population growth has on the human environment,

Having considered the fields of concern identified in the report of the present Conference,

Desirous of ensuring that the World Population Conference and the World Population Year contribute their utmost towards the universal resolution of the problems of population and development, bearing in mind the inherent differences in such problems from country to country, and

Emphasizing that the urgency of problems of population growth and distribution calls for intensive and dedicated work in various government sectors as well as innovative changes in many fields,

Declares that

1. While population has a direct effect on economic and social development and the human environment, conversely policies in the fields of education, health, housing, social security, employment and agriculture have an impact on population and, therefore, require integrated national planning and co-ordinating action at the highest government level.

2. It is important that the widespread benefits of economic growth should be ensured through policies and programmes to bring about a more equitable distribution of opportunity and income, with particular attention being paid to health and nutrition programmes to reduce infant and maternal mortality, programmes to achieve full and productive employment, action to reduce excessive rates of migration to the larger cities, measures to improve the status of women, and appropriate social security measures.

3. The priority of population and family planning fields should be recognized through the allocation of broad responsibilities in planning, evaluation and analysis of programmes in these fields to an appropriate organization within the Governments.

4. Governments of the region which seek to fulfil the ideals of their people and their national goals through population policies and programmes should:

- (a) recognize the essential role of population and family planning programmes as a means of effectively achieving the aspirations of families and their societies and should provide information, education and services for all citizens as early as possible;

- (b) encourage small families in rural and urban areas through intensive efforts in information and education, with the help of all relevant institutions and resources and the enactment of appropriate social and economic measures;
- (c) include in population policy and programmes provisions to ensure that all pertinent information reaches the policy makers, opinion leaders, and socio-economic planners;
- (d) encourage the development of new tools of communication and the utilization of existing ones so that knowledge may be shared at all levels of society;
- (e) consider establishing population commissions or other bodies having multidisciplinary and multidepartmental representation, to assess the current status and future needs in the fields of population and family planning;
- (f) ensure co-ordination among various agencies at the national, regional and local levels in order to expedite action and plans formulated in the light of integrated development policies;
- (g) provide essential training facilities with a view to improving planning skills, promoting comprehensive and innovative population policies and improving management skills in order to increase the administrative capabilities of population and family planning programmes.

5. The Economic Commission for Asia and the Far East with the co-operation of the United Nations Fund for Population Activities and other United Nations bodies, should ensure that there are, within the region, facilities for training and research in the fields of population and development, to meet the countries' needs for people skilled in the various areas of policy formulation, planning, implementation and evaluation, and to promote the advancement of knowledge in these fields.

6. The problems encountered in dealing with rapid population growth are of vital concern to the entire world community, and the Second Asian Population Conference requests that the report of its deliberations be taken into consideration in the drafting of the World Population Plan of Action; it likewise calls upon the World Population Conference, in 1974, to consider the means which might be applied on a global level for the solution of these problems.

7. Leadership and assistance on the part of the United Nations and its associated agencies are of crucial importance to all countries in achieving population goals consistent with and fundamental to the purposes set forth in this Declaration.

SELECTED PAPERS PRESENTED AT THE CONFERENCE

INTRODUCTION

These papers are grouped under topic headings, following the sequence of topics for the Conference itself, namely:

1. The demographic situation in the ECAFE region.
2. Manpower and employment in the context of economic development.
3. Implications of population growth for agricultural and industrial development.
4. Social aspects of the development of human resources.
5. Family planning programmes.
6. Ecological implications of rural and urban population change and of population transfers.
7. Research and training, and the dissemination of information and knowledge.
8. International co-operation in population policies and programmes.

TOPIC 1: THE DEMOGRAPHIC SITUATION IN THE ECAFE REGION.

THE DEMOGRAPHIC SITUATION IN THE ECAFE REGION

by

the ECAFE secretariat

Since the first Asian Population Conference was held in New Delhi in December 1963, there have been significant developments in the demographic situation of the ECAFE region. The ECAFE region now includes 31 countries and territories as compared with 23 at the time of the first Conference. In order to depict the total demographic situation of the region, the population of a number of countries either not members or active members of ECAFE in 1963 were included, as they are in this paper 1/ Countries included in this report which have become members or associate members in recent years are British Solomon Islands, Cook Islands, Fiji, Papua New Guinea, Nauru and Tonga. The combined population of these islands of Oceania amounts, as of mid-1970, to 3.2 million, or a share of 0.16 per cent of the total population of the region.

A significant change in the past nine years is the progress in the field of population policy and planning. Greater recognition of the adverse effect of rapid growth of population on national economic and social development, as well as of the impact of large family size on the standard of living of the individual family, has led to a revolution in the formulation of population policies and family planning activities in countries of the region. On the other hand, continued improvements in health facilities and further advances in medicine have outstripped the progress made in family planning, as evidenced in the increased rates of population growth for the 1960s, as compared with the 1950s. Urbanization, an indication of rural-urban migration, has continued to rise during the decade at a rapid rate, adding to city problems.

Another revolution which has occurred since the earlier Conference is that in demographic research, personnel and institutions. A survey undertaken by the secretariat has shown that at the end of 1970 there were at least 235 institutions undertaking demographic research and/or teaching, 223 courses on population and over 1,000 persons engaged in research and teaching in countries of the region. During the period 1965-1970 there were nearly 500 research studies completed or in progress at the time of the survey.2/ In addition, in August 1972 there were at least 200 newsletters, journals and periodical statistical publications which covered the subject of population.3/

An area in which little significant progress has yet been achieved is in the collection of demographic data. It has been shown in a note prepared for this Conference4/ that both the quality and the quantity of data being produced are

1/ *Report of the Asian Population Conference and Selected Papers* (United Nations publication, Sales No. 65.11 F.11), pp. 69-71.

2/ "Selected aspects of the first regional survey of demographic research and teaching institutions in the ECAFE region" (POP/APC.2/BP/12).

3/ "Survey of periodicals in the ECAFE region" (POP/APC.2/BP/15).

4/ "Demographic data: review and evaluation" (POP/APC.2/BP/2).

inadequate to meet the growing needs of development and family planning programmes. The number of countries in which no complete census had ever been taken remains the same as at the time of the last Conference. Although data on births and deaths have been collected through sample surveys and sample registration in a few countries of the region, the quality and coverage of vital statistics in general have made no significant improvement. Thus the lack of current population data of acceptable reliability required to meet various planning needs is still a serious handicap in the realization of development goals.

The impact of the growth of population on economic and social development has received further recognition during the latter part of the past decade, a fact reflected in the development of explicit population policies and family planning activities in countries of the region. Nevertheless, development planning and population planning continue to be separate spheres. There is no close co-ordination between population planning and planning for health services, education, housing, employment, industry, agriculture, trade, development of natural resources, transport and communication and other sectors of development. Similarly, the effect of economic and social development on the components of population growth has received very little attention, and population is being used merely as a denominator in the per capita income and consumption equations. Although the introduction of family planning activities in a society is directly aimed at reducing its fertility rate, other components of population change, i.e., mortality and migration rates, are affected as well, and changes in the age structure and distribution of the population are a further consequence. Moreover, the introduction of such activities stimulates interaction among demographic, economic and social factors.

Although recognition of the important interrelation between population and developmental factors is emerging among demographers, family planners and economic planners, no common approach has yet been developed for its understanding. The absence of such an approach is not only giving rise to imbalance between population growth and economic development, but has led to the emergence of new problems of ecological imbalance. In order to create more favourable conditions for development, it is important that due priority be given to this interrelationship in the formulation and implementation of development plans. It is in this context that the demographic situation in the region presented in this report should be viewed.

The major objective of this report is to present some basic demographic data and to provide a comparative picture of the region, its subregions and countries, as background information for discussions. It should be borne in mind that the population projections used in this presentation are for illustrative purposes only; preparatory work for projections based on the 1970/1971 round of censuses is now under way at United Nations Headquarters and the regional secretariats.

World and regional population trends: a century of growth

The population of the world in the year 1800 has been estimated at 930 million, that of Europe at 155 million and that of the ECAFE region at about 600 million. The nineteenth century was a century of demographic revolution in Europe but its estimated 1800 population took more than 100 years to double;

Table 1. Population of the world and major regions,
1900-2000 (population in millions)

World and regions	1900	1920	1930	1940	1950	1960	1970	1980	1990	2000
World total	1,650.0	1,859.9	2,068.6	2,295.0	2,485.7	2,981.6	3,635.2	4,467.3	5,456.0	6,515.0
More developed <u>a/</u>	562.0	672.6	757.9	820.7	857.8	976.2	1,090.6	1,210.2	1,337.0	1,454.0
Less developed <u>b/</u>	1,088.0	1,187.3	1,310.8	1,474.3	1,627.9	2,005.4	2,544.6	3,257.1	4,120.0	5,061.0
Africa	133.0	142.9	163.8	191.5	217.3	269.6	344.5	456.7	616.0	818.0
Americas	156.0	205.2	241.6	274.2	328.4	412.1	510.8	637.8	799.0	985.0
Latin America	(74.0)	(89.6)	(107.4)	(129.8)	(162.4)	(213.4)	(283.3)	(377.2)	(500.0)	(652.0)
Northern America	(82.0)	(115.7)	(134.2)	(144.3)	(166.1)	(198.7)	(227.6)	(260.7)	(299.0)	(333.0)
Asia	925.0	1,023.1	1,120.2	1,244.4	1,355.3	1,645.4	2,055.8	2,581.1	3,177.0	3,778.0
Europe	296.0	324.8	353.9	378.9	392.0	424.6	462.1	497.1	533.0	568.0
Oceania	6.0	8.5	10.0	11.1	12.6	15.8	19.4	24.0	30.0	35.0
USSR	134.0	155.3	179.0	195.0	180.1	214.2	242.6	270.6	302.0	330.0
ECAFE Region										
ECAFE region	914.7	1,001.5	1,097.2	1,216.0	1,321.1	1,600.0	1,994.3	2,496.1	3,036.8	3,568.5
Asian part <u>c/</u>	908.7	993.2	1,087.4	1,205.4	1,308.8	1,584.7	1,975.5	2,472.9	3,008.7	3,535.7
East Asia	496.6	552.7	590.5	633.5	663.2	779.0	928.6	1,093.8	1,255.0	1,407.3
Japan	43.8	55.4	63.9	71.4	82.9	93.2	103.5	116.3	125.1	132.8
Mainland and other	452.8	497.3	526.6	562.1	580.3	685.8	825.1	977.4	1,129.9	1,274.6

South Asia	412.1	440.5	496.9	571.9	645.6	805.5	1,046.9	1,379.1	1,753.4	2,128.4
Middle South	311.5	333.0	370.7	422.0	480.6	588.1	761.5	1,000.7	1,264.5	1,523.8
South East	100.6	107.5	126.3	150.0	165.0	217.4	285.4	378.5	489.0	604.5
Oceania part c/	6.0	8.3	9.8	10.7	12.3	15.3	18.8	23.2	28.4	32.8
Australia and										
New Zealand	4.5	6.6	8.0	8.7	10.1	12.7	15.4	18.8	22.6	25.8
Other Oceania	1.5	1.6	1.8	2.0	2.2	2.6	3.4	4.4	5.7	6.9

Sources: For world and regions: For 1900, Durand, J.D. "Expansion of world population", *Proceedings of the American Philosophical Society*, vol. III, No. 3, June 1967, p. 137; for 1920-1940, *World Population Prospects as Assessed in 1963* (United Nations publication, Sales No. 66.XIII. 2), p. 133. For 1950-2000, reference has been made to an internal working paper of the United Nations Population Division, "Urban and rural population: individual countries 1950-1985 and regions and major areas, 1950-2000" (ESA/P/WP.33/Rev.1), September 1970. For the ECAFE region, data for 1900 have been estimated by the secretariat with reference to the above sources, except for Japan for which reference was made to Bureau of Statistics, Office of the Prime Minister, *Japan Statistical Yearbook, 1971* (Tokyo, 1972).

Note:

a/

b/

c/

Because of rounding, totals are not in all cases the sum of the parts. Including Europe, USSR, Northern America, Japan, temperate South America, Australia, New Zealand.

Including east Asia except Japan, south Asia, Africa, Latin America less temperate South America, and Oceania less Australia and New Zealand.

Countries of the subregions of the ECAFE region follow.

Mainland and other: China, Hong Kong, Mongolia, the Democratic People's Republic of Korea and the Republic of Korea.

Middle south Asia:

Afghanistan, Bangladesh, Bhutan, India, Iran, Nepal, Pakistan, Sri Lanka.

Southeast Asia:

Brunei, Burma, the Khmer Republic, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand, the Republic of Viet-Nam and the Democratic Republic of Viet-Nam.

Other Oceania:

The British Solomon Islands, Cook Islands, Fiji, Nauru, Papua New Guinea, Tonga, Western Samoa.

The world totals are not adjusted for 1950 onwards for discrepancies in international migration data. For 1960, with adjustments, the world total is given as 2,986 million, less developed regions as 2,010 million and Asia as 1,650 million, the difference of 5 million occurring for mainland east Asia.

in 1900 it fell short of double the 1800 total by about 17 million.^{5/} The region which is now the ECAFE region was still characterized by high fertility and high mortality, and its population increased by only 50 per cent to about 914 million by 1900. In absolute terms, even this increase was more than the total population of Europe, 296 million, in 1900 (table 1). Although the demographic transition in Europe began during the late eighteenth century, average annual rates of growth for the periods 1800-1850 and 1850-1900 were as low as 0.5 and 0.8 per cent respectively.^{6/} Comparing nineteenth-century Europe with the twentieth-century ECAFE region, the estimated annual rates of growth in the latter for the periods 1900-1950 and 1950-2000 are 0.7 and 2 per cent, respectively. In spite of such low increments the nineteenth century was regarded as a period of declining mortality rates and rising growth rates in Europe, a problem roughly similar (though different in magnitude) to that being experienced by the ECAFE region in this century.

Recent United Nations estimates show that the more developed regions of the world during the period 1800-1850 had a crude birth rate of 39 and a crude death rate of 32, and for the period 1850-1900 a crude birth rate of 38 and a crude death rate of 29. The corresponding estimates for the less developed regions for the period 1900-1950 are 41 and 32, and for 1950-2000, 37 and 14.^{7/} The major difference is noted in the crude death rate which has begun to decline more rapidly in the less developed regions in the second half of the present century as compared to the more developed regions in the second half of the last century. The rate of natural increase in the less developed regions for the period 1950-2000 is thus estimated at 2.3 per cent per annum as compared to 0.9 per cent per annum of the more developed regions for the period 1850-1900.^{8/}

Tables 9-12 show the percentage distribution of population, trends in increases in the population in absolute figures, and percentages for the period 1900 to 2000 for the world, its major regions, and the ECAFE region and its subregions. The 1970 population of the ECAFE region was estimated at 1,994 million and is currently approaching 2,100 million. At the beginning of the century its population was 915 million; the estimate at the end of the century is placed at 3,569 million, implying a fourfold increase and a net addition of 2,654 million. This increase is equal to more than half of the increase of the world and two-thirds of that of the less developed regions.

The two major subregions with respect to population in the ECAFE region — and in the world — are east Asia and south Asia^{9/} but both have different population growth trends. At the beginning of the century east Asia had 85 million more people than south Asia's population of 412 million, but in 1960 the latter region was 27 million ahead of the former, and by 2000 it is expected that south

^{5/} *Population Planning*, Sector working paper, March 1972, p. 5.

^{6/} *Ibid*, p. 5.

^{7/} *The World Population Situation in 1970*, Population Studies, No. 49, (United Nations publication, Sales No. E.71.XIII.4), p. 7.

^{8/} A fuller presentation of the demographic transition in the region is made in another paper presented under topic I: Irene Taeuber, "Demographic transition in Asian regions."

^{9/} South Asia, as defined in this paper, comprises middle south Asia and southeast Asia and does not include southwest Asia.

Asia will have about 700 million more people than east Asia. It is not this reversal, but the sheer size of the population of south Asia — 2,128 million in the year 2000 — which provides a great challenge to national and international planners, scientists and administrators.

In 1900 the proportion of the world's population in the less developed areas of the world was 65.9 per cent (table 9). The figure declined to 63.4 per cent in 1930 and then began to rise. By 1970 it had increased to 70 per cent and by 2000 it is expected to rise to 77.6 per cent. At the beginning of the century, the population of the ECAFE region comprised 55.4 per cent; it decreased to 53 per cent in 1940 and is expected to increase to 55.9 per cent in 1980. The share of south Asia in the world population decreased from 25 per cent in 1900 to 23.7 per cent in 1920, and the trend was then reversed, increasing to 28.8 per cent in 1970, with the expectation of a further increase to 32.7 per cent by 2000.

Table 11 shows the percentage increases during the period 1900-2000, by decade and for the entire century. The difference in the percentage increase of population over the century between the more developed regions of the world and the less is striking. The population of the more developed regions during this period will increase by 158.7 per cent, as compared with 365.2 per cent of the population of the less developed regions. It may be noted that, whereas the population of Europe could not even double itself in the last century, the population of the ECAFE region is likely to quadruple by the end of the present century. On the other hand, Europe's population during the period 1900-2000 will still fail to double itself.

The subregions of east, middle south and southeast Asia, constituting the Asian part of the ECAFE region, with their many acute developmental problems, contain over half the world's population. These subregions are more meaningful for understanding the population problems of the region. The population of south Asia and the Oceania regions is likely to increase fivefold, or more, while that of east Asia will have tripled by the end of the century. By the year 2000 the number of inhabitants in the ECAFE region will almost equal the total for the world in 1970, according to the projections shown in table 1. This will occur in spite of significantly slower growth in east Asia, with 46.6 per cent of the population of the region, a trend which reflects the success achieved by China, Hong Kong, Japan and the Republic of Korea in reducing their rates of growth.

Rapid increase in the less developed regions in general and in the ECAFE region, in particular, is anticipated during the remaining part of the century, according to the medium variant population projections prepared by the United Nations Secretariat. One might argue that, given the current upsurge in family planning activities in the region, the population may not exceed 3,500 million by the end of the century. While it is not impossible to achieve a significant reduction in the rate of growth during the remaining years of the century, the numerical increases would still be large in the region.

In an exercise undertaken by the Secretariat an optimistic view has been taken with regard to reduction in the rates of growth, and due account has been

taken of the objectives of various countries in achieving the targets of their family planning programmes. The results of this exercise are shown in table 13 which shows that if great success is achieved through the expected breakthrough in science and contraceptive technology, the population of the ECAFE region by the end of the century will still exceed 2,800 million, more than double the 1950 population. Accordingly, even if all resources and efforts are mobilized, the growth of population will still be significant, with a doubling of the 1950 population figure by 2000 as the minimum. On the other hand, if such progress is achieved, the net reduction in the population of the ECAFE region by the year 2000 could be of the order of 764 million, which could mean smaller family size, about 180 million fewer families and about 180 million fewer houses required. Smaller families will increase the per capita income of the family. Supposing a house in which a family can live with human dignity to cost \$US1,000, the total saving on housing alone could be of the magnitude of \$US180,000 million. Should someone argue that a decent house can be built at a cost of \$US500, the total saving could still be \$US90,000 million. On the other hand, if people are allowed to live in shanty-towns, slums or substandard houses, the financial savings might be much smaller but then the social cost would be high.

Similar reductions in the requirements of food, educational and health facilities and various other amenities and necessities of life can also be expected. Savings under these heads could be utilized to create more favourable conditions for development. Larger investments could be made in creating more jobs, improving the skills of workers and raising the quality of everyday life so that people in both rural and urban areas can live in a better human environment.

Table 12 presents average annual rates of population growth for the world and by region for various periods of the twentieth century. It is interesting to find that during the period 1900-1950 the more developed and less developed regions were, for different reasons, growing within a very small margin, i.e. at average rates of 0.9 and 0.8 per cent, respectively. The difference in their rates for the period 1950-2000 is striking, with the more developed regions likely to grow at a rate of 1.1 per cent, as compared with 2.3 per cent for the less developed regions. The average annual rates for the entire century are 1 per cent for the more developed regions and 1.6 per cent for the less developed regions.

During the periods 1900-1950 and 1950-2000 the average annual rates of growth for the population of the ECAFE region are estimated at 0.7 per cent and 2 per cent respectively. The corresponding rates for Europe are estimated at 0.6 per cent and 0.7 per cent. Within the ECAFE region, a great deal of variation is observed in the rates. A notable feature is that during the period 1900-1950 Japan, where the demographic transition had already begun, had the highest rate, 1.3 per cent among all the areas in the Asian part of the region, and the mainland area of east Asia had the lowest, 0.5 per cent. But during the period 1950-2000 Japan's estimated rate of growth of 0.9 per cent is the lowest, and south Asia's 2.4 per cent is the highest.

Comparison based on the growth rates is a little misleading, in that it hides

the effect of population size. If the base population is large and is coupled with a high rate of growth, as in south Asia, the absolute increases, as shown in table 10, are so large that even if an abundance of resources were available, it would be difficult to manage and provide for additions of such a high magnitude as 1,483 million from 1950-2000. The same is true when the ECAFE region as a whole is compared with Europe. The former has a much larger base population and a much higher rate of population growth than the latter, and the additions to the population of the ECAFE region are therefore of a high order.

Population growth in countries of the ECAFE region: 1950-2000

Each country in the region is striving for economic and social development in order to improve the living standards of its people. Families and individuals within each country are also struggling to better their lot. In spite of this concerted struggle, progress in most of the developing countries, especially those in south Asia, is slow. Their multiphasic problems of development are directly or indirectly related to the rapid growth of population. In table 13 estimates of population in countries of the ECAFE region are presented for the period 1950-2000. The figures are merely illustrative and should not be taken as definitive; some projections in series A and all those in series B are conjectural estimates based on extrapolations. More work on population projects, based on data produced by the 1970/1971 round of censuses, is being undertaken and the figures presented in this table will be revised in due course.

It is not possible to offer even a brief description of the population growth of each country in this section of the paper; only some highlights of a few countries can be given.

The current population of China, the largest unit in the region and in the world, is estimated at about 801 million under series A and 781 million under series B. For 1950 the estimate is 540 million and for the year 2000 it is 1,178 million under series A and 954 million under series B. Currently China has more than one-third of the total population of the region.

The current population of India, the second largest unit in the region and in the world, is estimated at 586 million under series A and 563 million under series B. For 1950 its population is estimated at 359 million, and in the year 2000 the estimates are 1,081 million under series A and 834 million under series B. Currently India has more than one-fourth of the region's total population.

China and India together contain about two-thirds of the total population of the region and more than one-third of the total world population. Indonesia is the third most populous country in the region and the fifth most populous in the world (the USSR and the United States being the third and fourth). Its current population is estimated at 129 million under series A and at 122 million under series B. For 1950 the estimate is 77 million and by the year 2000 its population may increase to 262 million under series A and 186 million under series B.

The fourth most populous in the region and sixth in the world is Japan. Its current population estimate under both the series is placed at 106 million. In 1950, Japan had a population of 83 million, and the estimates for the year

2000 under the two series are 133 million and 128 million. It will be noted that in 1950 Japan had 6 million more people than Indonesia. In 1960, however, the Indonesian population exceeded Japan's population by about a million, and it is estimated that by the year 2000 Indonesia may have twice as many inhabitants as Japan.

The four largest countries, China, India, Indonesia and Japan, together have 78 per cent of the total population of the region. The remaining 22 per cent is larger than the population of Africa or either of the Americas, and is about equal to the size of Europe's population.

The two estimates under series A and B for each country are shown merely for comparative purposes. The figures shown against the B series are based on an optimistic assumption that countries in the region will be able to achieve significant success in their efforts to reduce the rate of population growth. However, the two sets of figures do provide a reference point for considering the benefits which might accrue to each country if the population grows at a slower rate than has been estimated under series A.

Table 14 presents the implied rates of growth of population of countries in the region based on the two projections for the period 1950-2000. It is shown by the last two columns that even if rates of growth are reduced drastically, to an average of 0.6 per cent per annum, for 1990-2000, the average for the second half of the century will still be about 1.5 per cent for the region under series B. With the reduction of the rate of growth to zero for all countries by the year 2000 — although making such an assumption for all countries of the region would be unrealistic — the average rate of growth for the second half of the century would still be more than 1 per cent per annum. It will be noted that in spite of the severe reduction assumed under series B, the 1950 population of every country, with the exception of China and Japan, will at least double itself by the year 2000. The population of China during this period may increase by 77 per cent and that of Japan by 54 per cent.

The foregoing summary suggests that the rapid decline in mortality during the past two decades has made a substantial contribution to population growth in the countries of the region, and that, where there has been a decline in fertility, it has generally not been sufficient to offset the decline in mortality. A more detailed description of the situation with regard to changes in fertility and mortality rates is given in the next section. The population growth trends in the countries of the region indicate the urgency of the problem and the need for policy-makers, planners, administrators and researchers to co-ordinate their activities, as it is by mutual support and co-operation that a realistic solution to the people's problems will be achieved.

Components of population growth

As vital registration systems in most developing countries of the region are less developed than their censuses, reliable data on fertility and mortality are more scanty than data on population size, growth, distribution and age composition. The situation with regard to statistics on internal and international migration is even more unsatisfactory. The presentation in this section on fer-

tility and mortality trends and levels is therefore based on scattered and sketchy evidence.

A. Fertility levels and trends

Recent estimates for the period 1950-2000, as given in table 2, show that during the period 1950-1970 the crude birth rate in the less developed regions was almost twice as high as that in the more developed regions. During the period 1960-1970, although there was a decline in both, the difference further widened.

Table 2. Estimated projected crude birth rates of selected regions and subregions, 1950 to 2000

Item	1950-1960	1960-1970	1970-1980	1980-2000
More developed regions	22	20	19	18
Less developed regions	43	41	38	31
East Asia <u>a/</u>	39	35	29	22
Middle south Asia	47	45	42	31
Southeast Asia	46	44	41	32
Japan	21	18	18	15

Source: The World Population Situation in 1970, (United Nations publication, Sales No. E. 71.XIII.4), table 5.

a/ Excluding Japan.

Table 3. Crude birth rates in selected countries of the ECAFE region having complete registration data, 1945-1970

	1945-1946	1950-1954	1955	1960	1965	1966	1967	1968	1969	1970
Australia <u>a/</u>	23.1	23.0	22.6	22.4	19.7	19.3	19.4	20.0	20.3	20.5
Brunei	44.0 <u>b/</u>	52.9	55.4	48.9	41.5	39.3	40.6	43.9	39.8	...
Fiji <u>c/</u>	40.2	40.0	38.5	39.9	35.9	34.9	34.4	30.2	29.0	29.9
Hong Kong	.....	34.2 <u>d/</u>	36.3	36.0	28.8	25.8	24.6	21.3	20.7	18.9*
Japan <u>e/</u>	30.2	23.7	19.4	17.2	18.6	13.8	19.4	18.5	18.4*	18.9*
Malaysia (West)	42.6 <u>b/</u>	44.1	44.0	40.9	36.7	37.3	35.3	35.2	33.0	32.1*
New Zealand	26.5	25.8	26.1	26.5	22.9	22.5	22.4	22.6	22.5*	22.1
Singapore <u>f/</u>	46.4 <u>b/</u>	45.5	44.3	38.7	31.1	29.8	27.1	24.8	23.1	22.1
Sri Lanka	38.2	38.5	37.3	36.6	33.1	32.3	31.6	32.0	31.7	...

Source: United Nations: **Demographic Yearbook, 1969** (United Nations publication, Sales No.: E/F.70.XIII.1), table 12; **Demographic Yearbook, 1970** (United Nations publication, Sales No. E/F.71.XIII.1), table 13.

* Provisional.

a/ Prior to 1967, excluding full-blooded aborigines estimated at 40,081 in June 1961 and 49,036 in June 1966.

b/ Three years' average.

c/ Prior to 1949, rates include late fetal deaths.

d/ Four years' average.

e/ Births are for Japanese nationals in Japan only, but rates are computed on population including foreigners, except Allied military and civilian personnel and their dependents stationed in the area. Prior to May 1952, excluding data for Takara Archipelago and, prior to 1954, Amami Islands.

f/ Rates computed on population excluding transients afloat and non-locally domiciled military and civilian services personnel and their dependents, and prior to 1953, data tabulated by year of registration rather than occurrence.

The three subregions shown in this table make up the Asian part of the ECAFE region. It is noted that among the three subregions, east Asia has the lowest fertility and a greater decline for the period 1950-2000 than middle south Asia or south east Asia. Japan has been included in this table because it is the only country in Asia which has completed its demographic transition.

In table 3 crude birth rates (CBR) of countries for which satisfactory vital registration data for estimating fertility are available are presented for the postwar period. It is noted that there is a considerable decline in the rates from 1945-1949 to 1967-1970, and their current level of CBR varies from 19 in Hong Kong and Japan to 32 in West Malaysia. On the other hand, estimates for countries for which no reliable data are available are rather sketchy and there is no one firm estimate which can be cited for each country. For example, for India an estimated CBR, obtained by reverse-surviving the number of children aged 0-4 yr for the period 1955-1960, is 45.2, ^{10/} but another source has given its current estimate of 40-50, ^{11/} while recent sample registration results show 37.6 for 1969 and 37.0 for 1970. ^{12/} Similar variations in the estimates are observed for other countries. The major problem is the dearth of reliable data.

With regard to achievements in fertility regulation, the current position is summarized in table 4. Countries which are making significant progress at present contain 47 per cent of the total population of the region, as shown in categories I and II. It is noteworthy that, with the exception of China and the Republic of Korea, about which official information has not come to hand, all of these countries have satisfactory vital statistics. Although almost all countries, even those in category V, have some activities in family planning, countries having more than half of the region's population have made no significant progress.

It may be useful to present Japan as a model in the achievement of fertility regulation. Table 5 presents trends in the age-specific fertility rates of Japan for the period 1925-1969. It is observed that the total fertility rate of Japan declined from 5.1 in 1925 (which is as high as the current level in the developing countries of the region) to 3.7 in 1939, indicating that the declining trend began before the Second World War and that the rise due to the postwar baby boom, as shown by the 1947 rates, was a temporary upsurge followed immediately by a decline beginning in 1948. One interesting feature of the Japanese fertility trends is that, with minor fluctuations, there is a consistent decline in each age group, but the decline in the rates of the age groups 15-19 yr, 35-39 yr, 40-44 yr and 40-49 yr is sharper, while the change in the rate of the age group 25-29 yr is less striking. The effect of the "year of the fiery horse" is reflected in the drastic reduction in the rates of 1966.

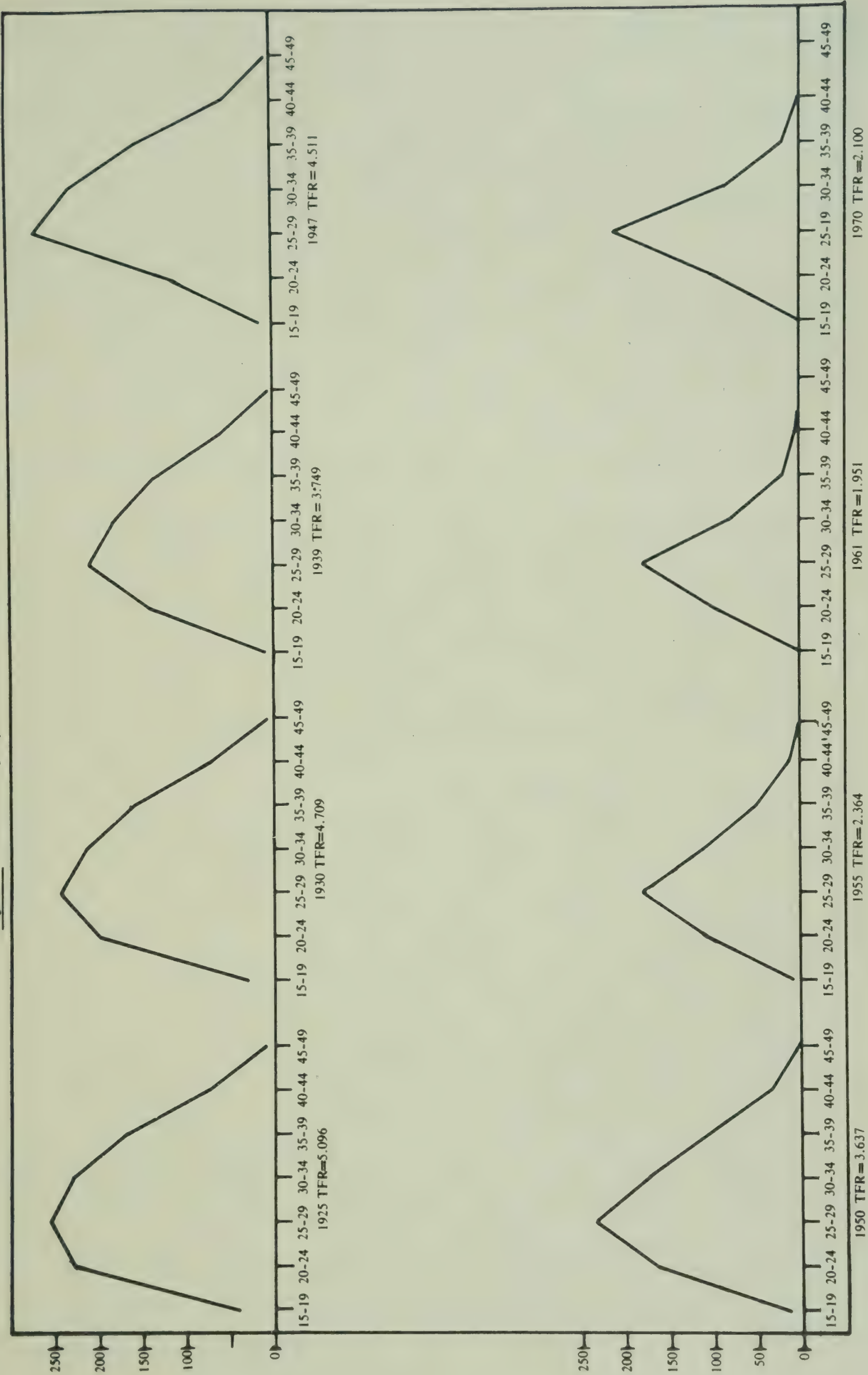
The sharp declines in the age-specific fertility rates in Japan are further demonstrated in the figure. It is noted that, with the passage of time, both the rise

^{10/} "Estimates of crude birth rates, crude death rates, and expectation of life at birth, regions and countries, 1950-1965" (ESA/P/WP/38).

^{11/} Population Council, "Population and family planning programmes: a factbook," (Reports on Population and Family Planning), November, 2 July 1970, table 4.

^{12/} Registrar General, *Sample Registration Bulletin*, vol. VI. No. 1, January-March 1972, Ministry of Home Affairs, New Delhi.

Figure 1. Trends in the age-specific fertility rates of Japan in selected years



Source: Table 5

Table 4. Fertility level and population increase in countries of the ECAFE region, classified by achievement in fertility regulation

Classification and countries	Current CBR level	Share of region's population ^{a/} in 1972 (percentage)	Projected population increase, medium variant, 1970-2000		
			Numbers (millions)	Percentage	Annual rate
Total all countries		100.0	1,574.0	78.9	2.0
i. Low level of fertility achieved: Australia, China, Hong Kong, Japan, New Zealand, Singapore	19 - 22 ^{b/}	44.5	448.3	49.9	1.4
ii. Noticeable lowering of fertility being experienced: Fiji, Republic of Korea, Malaysia, Sri Lanka	30 - 34	2.8	48.5	86.6	2.1
iii. Programmes established but effect on fertility not clearly measurable: Bangladesh, India, Pakistan	37- 44	35.1	690.8	99.9	2.3
iv. Programmes in early stages: Indonesia, Iran, Nepal, Philippines, Thailand	44 - 50	11.9	282.0	120.0	2.7
v. No announced policy and programme or no available information: Afghanistan, Bhutan, British Solomon Islands, Brunei, Burma, Cook Islands, Khmer Republic, Democratic People's Republic of Korea, Laos, Mongolia, Nauru, Papua New Guinea, Tonga, Republic of Viet-Nam, Democratic Republic of Viet-Nam, Western Samoa	35-50	5.7	104.4	92.5	2.2

^{a/} Assessed after consulting various sources.

^{b/} This range might be different if information on China had been available at the time of writing.

and fall of the curve have become sharper and steeper. The rise has assumed a linear shape while the fall, after assuming a linear shape, has developed a curvature. The age group 25-29 yr has experienced the lowest decline of all groups, and this is the model age for childbearing in Japan. This feature is due to postponement of marriages and childbearing in the earlier age groups. Fertility rates in the age groups 45-49 yr, 40-44 yr and 15-19yr after achieving the minimum level, have almost been stabilized.

Of course, Japan is economically much more advanced than other countries in the Asian part of the region. Similarly, countries which have made significant progress in reducing fertility rates (categories I and II in table 4) are the ones which have either a high rate of economic growth or high literacy, an indication of the close interrelation between progress in fertility regulation and progress in economic and social development. More research based on reliable data is needed to explore this subject.

B. Mortality levels and trends

It is the rapid decline in mortality following the Second World War which has changed the course of demographic history. Recent estimates for the period 1950-2000, as given in table 6, show that the decline in the crude death rate (CDR) from the period 1950-1960 to 1960-1970 was higher in the less developed regions than in the more developed regions. It is anticipated that if food supply and other necessities of subsistence keep pace with increase in numbers, by the year 2000 the less developed regions will have achieved a lower level of mortality rate than the more developed regions. The slight difference results from the higher proportion of young ages in the former regions. As compared with the less developed regions, the declines are sharper for east Asia, middle south Asia and southeast Asia, which comprise the Asian part of the ECAFE region. It is estimated that the declines in the crude rate of these subregions will be at least 60 per cent over the period 1950-2000, whereas the decline in the CBR of these subregions, shown in table 2, could be at the most 45 per cent, implying that the rate of natural increase, except in east Asia, might even rise over the period 1950-2000. Of course, rates of natural increase have increased during the past two decades in most developing countries of the ECAFE region, owing to the faster decline of CDR, but the continuation of these trends may have serious implications for the Second Development Decade.

In table 7 postwar trends of crude death rates are presented for those countries of the region for which satisfactory vital registration data for estimating mortality rates are available. The declines in Brunei, Japan, West Malaysia and Sri Lanka are more pronounced than those in Australia, Fiji, Hong Kong, New Zealand and Singapore. In all of these countries the current expectation of life at birth is 65 yr or over. Sri Lanka is one developing country which is often cited as an example of rapid decline in mortality.

Mortality estimates, like those for fertility, vary for countries for which satisfactory data on mortality are not available. One source provides the following current estimates of CDR for selected countries of the region: Burma

Table 5. Trends in age-specific fertility rates, Japan, 1925-1970

Year	15-19yr	20-24yr	25-29yr	30-34yr	35-39 yr	40-44yr	45-49yr	TFR
1925	43.1	228.2	259.9	228.7	174.4	74.9	9.9	5.096
1930	31.5	200.6	249.1	217.4	163.4	71.8	7.9	4.709
1937	18.8	177.0	244.4	206.8	152.3	66.1	7.7	4.366
1938	15.5	152.6	212.4	181.3	136.5	60.3	6.9	3.828
1939	13.1	141.0	212.3	182.5	135.1	59.0	6.8	3.749
1940	12.6	145.9	239.6	208.1	146.1	62.0	7.4	4.109
1947	14.9	166.6	268.6	233.5	156.5	56.7	5.3	4.511
1948	17.5	182.0	255.6	210.2	147.3	58.2	4.5	4.377
1949	16.0	180.3	265.0	212.1	133.8	48.5	3.2	4.295
1950	13.3	160.7	236.2	174.7	104.4	35.9	2.1	3.637
1951	10.7	141.1	216.5	161.2	89.4	28.7	1.5	3.246
1952	8.8	130.1	204.9	148.1	76.9	22.9	1.3	2.965
1953	7.3	120.8	191.8	131.9	65.1	18.2	1.1	2.681
1954	6.4	114.0	181.6	119.2	56.6	14.9	0.9	2.468
1955	5.9	111.5	180.6	112.1	49.4	12.6	0.7	2.364
1956	5.1	106.9	176.4	100.7	43.3	10.6	0.6	2.218
1957	4.3	99.3	169.6	89.8	35.6	8.3	0.5	2.037
1958	4.0	106.4	181.3	89.0	32.5	7.5	0.4	2.106
1959	4.0	107.1	179.0	83.5	28.2	6.4	0.4	2.043
1960	4.3	106.6	181.1	79.7	23.9	5.2	0.3	2.006
1961	4.3	100.5	181.6	78.1	20.9	4.5	0.3	1.951
1962	4.1	99.7	185.7	77.8	19.0	3.9	0.3	1.953
1963	3.8	98.1	191.1	80.8	18.7	3.5	0.2	1.981
1964	3.3	102.0	195.4	82.6	18.6	3.2	0.2	2.027
1965	3.3	112.3	203.1	86.4	19.3	3.0	0.2	2.138
1966	3.0	90.7	144.4	62.0	16.0	2.7	0.2	1.595
1967	3.0	102.6	212.7	91.4	19.6	2.7	0.1	2.161
1968	4.2	98.5	206.5	87.4	20.0	2.7	0.2	2.098
1969	4.3	92.2	205.8	86.1	20.1	2.7	0.2	2.057
1970	4.5	96.3	210.4	86.1	19.8	2.7	0.2	2.100

Source: 1925-1959, from *Standardized Vital Rates for all Japan, 1920-1960*, Institute of Population Problems, Research Series, No. 155, 1 August 1963, p. 18.
1960-1966, Ministry of Health and Welfare, *Vital Statistics 1966 Japan*, vol. 1, Tokyo, 1969, p. 60.
1967-1969, Ministry of Health and Welfare, *Vital Statistics, 1968, 1969 Japan*, vol. 3, Tokyo, 1971, p. 51.

Table 6. Estimated and projected crude death rates selected regions and subregions of the world, 1950-2000

Item	1950-1960	1960-1970	1970-1980	1980-2000
More developed regions	10	9	9	10
Less developed regions	22	17	13	9
East Asia ^{a/}	21	16	13	9
Middle South Asia	27	19	14	9
South East Asia	23	18	13	8
Japan	9	7	7	9

Source: **The World Population Situation** in 1970 United Nations publication, Sales No. E.71.X111.4, table 6.

^{a/} Excluding Japan.

and Khmer Republic, 25; India, 15-20; Indonesia, 21; Iran, 19; Laos, 22, Pakistan, 15-20; Philippines, 12-16; Thailand, 12-15; and Republic of Viet-Nam, 12-15.^{13/} Another source provides the following estimated averages for the period 1960-1965: Afghanistan, 32; Burma, 21; India, 21; Indonesia, 24; Iran, 22; Khmer Republic, 17; Laos, 18; Nepal 23; Pakistan, 22; Philippines, 13; Thailand, 14, and Republic of Viet-Nam, 18.^{14/} India's sample registration project gives a CDR of 18 for 1969 and 16 for 1970. ^{15/} In spite of the questions concerning the actual level of the rates raised by these variations, which incidentally emphasize the urgency of the need for reliable data, it may be concluded that the mortality level has declined in all these countries during the past two decades and it still has a substantial potential for further decline. In all these countries, the current average expectation of life at birth is in the range of 40-55 yr.

For an illustration of mortality trends, Sri Lanka may be cited as a model of rapid decline. The crude death rate, 19.8 in 1946, declined to 14.0 in 1947, 12.4 in 1950 and 10.8 in 1955. Simultaneously, a rapid decline in infant mortality rates occurred, from 141 in 1946 to 101 in 1947, 81.6 in 1950 and 71.5 in 1955. The decline in the mortality level of Japan during the same period was even steeper, but it was accompanied by rapid economic development, which was not the case in Sri Lanka.

The decline in mortality in Sri Lanka was at the beginning attributed to malaria eradication, but a study published in 1965 indicated that only one-fifth of the deaths ascribed to malaria were actually directly due to malaria.^{16/} It was then hypothesized that malaria eradication reduces the incidence of other epidemics and therefore also contributes to the reduction in mortality. Another

^{13/} Population Council, *op. cit.*, table 4.

^{14/} ESA/P/WP/38, *op. cit.*, table 1.

^{15/} Registrar General, India, *op. cit.*

^{16/} P. Newman, *Malaria Eradication and Population Growth*, Ann Arbor, Michigan 1965 p. 77.

Table 7. Crude death rates in selected countries of the ECAFE region having complete registration data for the postwar period

Country	1946	1950	1955	1963	1965	1966	1967	1968	1969	1970
Australia	10.1 <u>a/</u>	9.6	8.9	8.7	8.8	9.0	8.7	9.1	8.7	9.0
Brunei	19.3	18.1	14.0	7.0	6.6	6.3	6.1	6.4	6.0	
Fiji <u>b/</u>	13.1	11.1	8.2	5.8	5.1	5.2	5.1	5.2	4.6	4.7
Hong Kong	10.7	8.2 <u>c/</u>	8.2 <u>c/</u>	5.6	4.8	5.2	5.3	5.0	4.8	5.1*
Japan <u>d/</u>	17.6	10.9	7.8	7.0	7.2	6.8	6.8	6.8	6.7*	6.9*
Malaysia <u>c/</u> (West)	20.0	15.8	11.5	9.0	7.9	7.6	7.5	7.6	...	...
New Zealand	10.1	9.5	9.0	8.8	8.7	8.9	8.4	8.9	8.7	8.8*
Singapore <u>f/</u>	13.3 <u>a/</u>	12.1	8.7	5.8	5.6	5.5	5.4	5.6	5.1	5.3
Sri Lanka	19.8	12.4	10.8	8.7*	8.2	8.3	7.5	7.9	...	...

Sources: *Demographic Yearbook, 1957* (United Nations publication, Sales No. 1957. XIII. 1), table 8.
Demographic Yearbook, 1967 (United Nations publication, Sales No. E/F.68. XIII. 1), table 17;
Demographic Yearbook, 1970 (United Nations publication, Sales No. E/F.71. XIII. 1), table 17.

Table 8. Age composition of the population of the ECAFE region, 1970 and 1980
(millions)

Year and Sex	Total <u>a/</u>	0-4yr	5-14yr	0-14 yr	15-24yr	15-49yr	15-59yr	60yr and over	Dependents
1970									
Both sexes	1,993	306	484	789	379	961	1,087	117	906
Males	1,009	156	247	403	193	487	551	56	459
Females	983	150	237	386	186	474	536	61	447
1980									
Both sexes	2,494	356	609	965	469	1,206	1,372	158	1,123
Males	1,266	182	311	493	240	613	697	76	569
Females	1,229	174	298	472	229	593	675	82	554
Percentage increase, 1970-1980									
Both sexes	25.2	16.3	25.8	22.3	23.7	25.5	26.2	35.0	24.0
Males	25.4	16.7	25.9	22.3	24.4	25.9	26.5	35.7	24.0
Females	25.0	16.0	25.7	22.3	23.1	25.1	25.9	34.4	23.9
Percentage age distribution									
1970									Dependency ratio
Both sexes	100.0	15.3	24.3	39.6	19.0	48.2	54.6	5.8	83
Males	100.0	15.4	24.5	39.9	19.1	48.3	54.6	5.5	
Females	100.0	15.2	24.1	39.3	18.9	48.2	54.6	6.2	
1980									
Both sexes	100.0	14.3	24.4	38.7	18.8	48.3	55.0	6.3	82
Males	100.0	14.4	24.6	39.0	19.0	48.5	55.0	6.0	
Females	100.0	14.2	24.2	38.4	18.7	48.2	54.9	6.7	

Source: Medium variant projections prepared by the United Nations Secretariat (designated as series A in this paper).

a/ These totals do not include the populations of Bhutan, British Solomon Islands, Cook Islands, Nauru and Tonga, for which the age breakdown was not available.

Table 9. Population of the world and major regions, 1900-2000
(percentages)

Region	1900	1920	1930	1940	1950	1960	1970	1980	1990	2000
World total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
more developed	34.1	36.2	36.6	35.8	34.5	32.7	30.0	27.2	24.6	22.4
less developed	65.9	63.8	63.4	64.2	65.5	67.3	70.0	72.9	75.4	77.6
Africa	8.1	7.7	7.9	8.3	8.7	9.0	9.5	10.2	11.3	12.6
Americas	9.5	11.0	11.7	12.0	13.2	13.8	14.1	14.3	14.6	15.1
Latin America	(4.5)	(4.5)	(5.2)	(5.7)	(6.5)	(7.1)	(7.8)	(8.4)	(9.2)	(10.0)
North America	(5.0)	(6.2)	(6.5)	(6.3)	(6.6)	(6.7)	(6.3)	(5.8)	(5.5)	(5.1)
Asia	56.1	55.0	54.2	54.2	54.9	55.3	56.6	57.8	58.2	58.0
Europe	17.9	17.5	17.1	16.5	15.6	14.2	12.7	11.1	9.8	8.7
Oceania	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
USSR	8.1	8.4	8.7	8.5	7.2	7.2	6.7	6.1	5.5	5.1
ECAFE region										
ECAFE region	55.4	53.8	53.0	53.0	53.1	53.8	54.9	55.9	55.7	54.8
Asian part	55.1	53.4	52.6	52.5	52.7	53.3	54.3	55.4	55.1	54.3
East Asia	30.1	29.7	28.5	27.6	26.7	26.3	25.5	24.5	24.0	21.6
Japan	2.7	3.0	3.1	3.1	3.3	3.1	2.9	2.6	2.3	2.0
Mainland and other	27.4	26.7	25.5	24.5	23.3	23.1	22.7	21.9	20.7	19.6
South Asia	25.0	23.7	24.0	24.9	25.9	27.0	28.8	30.9	32.1	32.7
Middle South Asia	18.9	17.9	17.9	18.4	19.3	19.7	21.0	22.4	23.2	23.4
Southeast Asia	6.1	5.8	6.1	6.5	6.6	7.3	7.9	8.5	9.0	9.3
Oceania part	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Australia and New Zealand	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Other Oceania	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Source: Table 1.

Table 10. Increase in the population of the world and major regions, 1900-2000
(millions)

Region	1900-1920	1920-1930	1930-1940	1940-1950	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000	1900-1950	1950-2000	1900-2000
World total	209.9	208.7	226.4	190.7	495.9	653.6	832.1	988.7	1,055.5	836.0	4,029.0	4,865.0
more developed	110.6	85.2	62.8	37.1	118.3	114.4	119.7	126.8	117.0	296.0	596.0	892.0
less developed	99.3	123.5	163.6	153.5	377.6	539.2	712.5	862.9	938.4	540.0	3,433.0	3,973.0
Africa	9.9	20.9	27.6	25.9	52.3	74.9	112.2	159.3	202.0	601.0	84.0	685.0
Americas	49.2	36.3	32.6	54.3	83.7	98.7	127.0	161.2	186.0	657.0	1 72.0	829.0
Latin America	(15.6)	(17.8)	(22.4)	(32.5)	(51.0)	(69.8)	(93.9)	(122.8)	(152.0)	(490.0)	(88.0)	(578.0)
Northern America	(33.7)	(18.5)	(10.2)	(21.7)	(32.6)	(28.9)	(33.1)	(38.3)	(34.0)	(167.0)	(84.0)	(251.0)
Asia	98.1	97.1	124.2	110.9	290.1	410.4	525.3	595.9	601.0	430.0	2,423.0	2,853.0
Europe	28.8	29.1	25.0	13.0	32.6	37.6	34.9	35.9	35.0	176.0	96.0	272.0
Oceania	2.5	1.5	1.0	1.5	3.2	3.6	4.7	6.0	5.0	22.0	7.0	29.0
USSR	21.3	23.7	16.0	-14.9	34.2	28.4	28.0	31.4	28.0	150.0	46.0	196.0
ECAFE region												
ECAFE region	86.7	95.7	118.9	105.1	278.8	388.8	501.8	540.7	531.7	406.4	2,247.4	2,653.8
Asian part	84.5	94.2	117.9	103.4	275.9	385.3	497.4	535.5	527.3	400.1	2,226.8	2,627.0
East Asia	56.1	37.8	43.0	28.7	115.8	144.4	165.2	161.2	152.3	166.6	744.1	910.7
Japan	11.5	8.5	7.5	18.2	18.2	10.3	12.8	8.8	7.7	39.1	49.8	88.9
Mainland and other	44.5	29.3	35.5	38.5	90.4	134.1	152.3	161.1	144.7	127.5	694.3	821.8
South Asia	28.4	56.5	74.9	79.0	155.1	240.9	332.2	374.3	375.0	233.5	1,482.8	1,716.3
Middle South Asia	21.5	37.7	51.3	56.8	109.2	173.5	239.2	263.8	263.8	169.1	1,043.2	1,212.3
Southeast Asia	6.9	18.7	23.7	22.2	45.9	67.4	93.1	110.5	110.5	64.4	4 39.6	504.0
Oceania part	2.3	1.5	0.9	1.7	3.0	3.5	4.4	5.3	4.4	6.4	20.5	26.9
Australia and New Zealand	2.1	1.4	0.7	1.4	2.6	2.7	3.4	3.9	3.2	5.6	15.7	21.3
Other Oceania	0.2	0.1	0.2	0.3	0.4	0.8	1.0	1.4	1.2	0.8	4.8	5.4

Source: Table 1.

Note: Because of rounding, totals are not in all cases the sum of the parts.

Table 11. Increase in the population of the world and major regions, 1900-2000
(percentages)

Region	1900- 1920	1920- 1930	1930- 1940	1940- 1950	1950- 1960	1960- 1970	1970- 1980	1980- 1990	1990- 2000	1900- 1950	1950- 2000	1900- 2000
World total	12.7	11.2	10.9	8.3	20.0	21.9	22.9	22.1	19.4	50.6	162.1	294.9
more developed	19.7	12.7	8.3	4.5	13.8	11.7	11.0	10.5	8.8	52.6	69.5	158.7
less developed	9.1	10.4	12.5	10.4	23.2	26.9	28.0	26.5	22.8	49.6	210.9	365.2
Africa	7.5	14.6	16.9	13.5	21.9	27.8	32.6	34.9	32.8	63.4	276.4	515.0
Americas	31.6	17.7	13.5	19.8	24.1	24.0	24.9	25.3	23.3	110.5	199.9	531.4
Latin America	21.1	19.9	20.9	25.1	31.4	32.8	33.2	32.6	30.4	119.4	301.5	781.1
Northern America	41.1	16.0	7.6	15.1	19.6	14.5	14.5	14.7	11.4	102.5	100.5	306.1
Asia	10.6	9.5	11.1	10.9	21.4	24.9	25.6	23.1	18.9	46.5	178.7	308.4
Europe	9.7	9.0	7.1	3.4	8.3	8.9	7.6	7.2	6.6	32.4	44.9	91.9
Oceania	42.0	17.9	10.1	13.7	25.3	22.9	24.0	24.9	16.7	109.6	178.4	483.3
USSR	15.9	15.3	8.9	-7.7	19.0	13.2	11.6	11.6	9.3	34.4	83.3	146.3
ECAFE region												
ECAFE region	9.5	9.6	10.8	8.6	21.8	24.7	25.2	21.7	17.5	44.4	170.1	290.2
Asian part	9.3	9.5	10.9	8.6	21.7	24.7	25.2	21.7	17.5	48.0	170.1	1 89.1
East Asia	11.3	6.8	7.3	4.7	18.7	18.5	17.8	14.7	12.1	33.5	114.5	183.4
Japan	26.3	15.3	11.8	16.2	12.4	11.1	12.4	7.7	6.0	89.1	60.1	202.8
Mainland and other	9.8	5.9	6.7	3.2	15.1	20.3	18.5	15.6	12.8	28.2	119.6	181.5
South Asia	6.9	12.8	15.1	12.9	23.8	30.0	31.7	27.1	21.4	56.7	229.7	416.5
Middle South Asia	6.9	11.3	13.8	13.9	22.8	29.5	31.4	26.4	20.5	54.3	217.1	389.2
Southeast Asia	6.9	17.4	18.7	10.1	26.7	31.3	32.6	29.2	23.6	64.0	266.4	500.9
Oceania part	38.2	17.9	9.5	15.5	24.0	22.6	23.6	22.7	15.6	106.1	167.9	447.2
Australia and												
New Zealand	46.4	20.4	9.0	16.2	25.3	21.2	22.2	20.6	14.1	123.3	158.9	473.3
Other Oceania	12.4	8.0	11.6	12.5	17.9	29.6	30.2	31.4	21.4	52.4	209.5	376.4

Table 12. Average annual increase in the population of the world and major regions, 1900-2000
(percentages)

Region	1900- 1920	1920- 1930	1930- 1940	1940- 1950	1950- 1960	1960- 1970	1970- 1980	1980- 1990	1990- 2000	1900- 1950	1950- 2000	1900- 2000
World total	0.6	1.1	1.0	0.8	1.8	2.0	2.1	2.0	1.8	0.8	1.9	1.4
more developed	0.9	1.2	0.8	0.4	1.3	1.1	1.1	1.0	0.8	0.9	1.1	1.0
less developed	0.4	1.0	1.2	1.0	2.1	2.4	2.5	2.4	2.1	0.8	2.3	1.6
Africa	0.4	1.4	1.6	1.3	2.2	2.5	2.9	3.0	2.9	1.0	2.7	1.8
Americas	1.4	1.6	1.3	1.8	2.3	2.2	2.3	2.3	2.1	1.5	2.2	1.9
Latin America	1.0	1.8	1.9	2.3	2.8	2.9	2.9	2.9	2.7	1.6	2.8	2.2
Northern America	1.7	1.6	0.7	1.4	1.8	1.4	1.4	1.4	1.1	1.4	1.4	1.4
Asia	0.5	0.9	1.1	0.9	2.0	2.3	2.3	2.1	1.8	0.8	2.1	1.4
Europe	0.5	0.9	0.7	0.3	0.8	0.9	0.7	0.7	0.6	0.6	0.7	0.7
Oceania	1.8	1.7	1.0	1.3	2.3	2.1	2.2	2.3	1.6	1.5	2.1	1.8
USSR	0.7	1.4	0.9	-1.0	1.8	1.3	1.1	1.1	0.9	0.6	1.2	0.9
ECAFE region												
ECAFE region	0.5	0.9	1.0	0.8	1.9	2.2	2.3	2.0	1.6	0.7	2.0	1.4
Asian part	0.5	0.9	1.0	0.8	1.9	2.2	2.3	2.0	1.6	0.7	2.0	1.4
East Asia	0.5	0.7	0.7	0.5	1.6	1.8	1.7	1.4	1.2	0.7	2.0	1.4
Japan	1.2	1.4	1.1	1.5	1.2	1.1	1.2	0.7	0.6	1.3	0.9	1.1
Mainland and other	0.5	0.6	0.7	0.3	1.7	1.9	1.7	1.5	1.2	0.5	1.6	1.0
South Asia	0.3	1.2	1.4	1.2	2.2	2.7	2.8	2.4	2.0	0.9	2.4	1.7
Middle South Asia	0.3	1.1	1.3	1.3	2.0	2.6	2.8	2.4	1.9	0.9	2.3	1.6
Southeast Asia	0.3	1.6	1.7	1.0	2.8	2.8	2.9	2.6	2.1	1.0	2.6	1.8
Oceania part	1.6	1.7	0.9	1.5	2.2	2.1	2.1	2.0	1.5	1.5	2.0	1.7
Australia and												
New Zealand	1.9	1.9	0.9	1.5	2.3	1.9	2.0	1.9	1.5	1.6	1.9	1.8
Other Oceania	0.6	0.8	1.1	1.4	1.7	2.6	2.7	2.6	1.9	0.9	2.3	1.6

Source: Table 1.

Table 13. Population of countries of the ECAFE region, estimates and projections, 1950-2000
(thousands)

Region or country	1950	1960	1970	1972	1975	1980	1985	1990	2000
ECAFE region									
A	1,321,189	1,599,981	1,994,301	2,090,598	2,235,041	2,496,108	2,774,517	3,037,015	3,568,468
B	1,321,189	1,595,325	1,936,978	2,011,248	2,125,147	2,310,898	2,476,038	2,620,837	2,804,447
Asian part									
A	1,308,844	1,584,679	1,975,537	2,070,998	2,214,190	2,472,908	2,748,696	3,008,661	3,535,692
B	1,308,844	1,580,023	1,918,244	1,991,755	2,104,516	2,288,213	2,451,218	2,594,092	2,774,642
Oceania part									
A	12,345	15,302	18,764	19,600	20,851	23,200	25,821	28,354	32,776
B	12,345	15,302	18,734	19,493	20,631	22,685	24,820	26,745	29,805
Asia									
Afghanistan									
A	11,898	13,800	16,978	17,907	19,301	22,006	24,961	28,272	34,995
B	11,898	13,800	16,978	17,908	19,303	21,840	24,469	26,884	31,200
Bangladesh									
A	42,493	54,394	73,186	78,561	86,617	101,860	119,042	133,078	160,602
B	42,493	51,871	63,853	66,789	71,193	78,989	86,784	93,492	103,274
Bhutan									
A	575	670	836	874	932	1,039	1,158	1,294	1,570
B	575	670	836	874	932	1,039	1,159	1,281	1,501

Sources: For both series, data for 1950 and 1960 taken from an internal working paper of the United Nations Secretariat "Urban and rural population: individual countries: 1950-1985 and regions and major areas, 1950-2000" (ESA/P/WP.33/Rev. 1).

Note: Series A for 1970-1985 are medium variant projections as prepared by the United Nations, Population Division.

Series A 1990 and 2000 and series B 1970-2000: tentative projections prepared by the ECAFE Secretariat, pending further returns from recent censuses.

study showed that, in addition to the contribution of malaria eradication, the decline in the mortality rates for other diseases was due mainly to a rapid expansion of health facilities, such as hospitals, maternity homes and para-medical services and the distribution of free milk to children during the postwar period in Sri Lanka. ^{17/} Other factors may be responsible for the decline of mortality. For example, in 1953 slightly more than two-thirds of Sri Lanka's population aged 15 yr and over was literate and by 1963 this proportion increased to slightly over three-fourths. ^{18/} This fact suggests that, like fertility, mortality is also interrelated with various economic and social factors which deserve deeper study.

Sex and age composition

Reliable data by sex and age are urgently needed to divide populations into subgroups for the preparation of development plans and family planning programmes, but in many developing countries of the region information on sex composition is affected by sex-selective under-enumeration. The data on age in most developing countries of the region is often inaccurate and deficient. Although attempts are being made in these countries to improve the quality of data, progress is slow and deserves the special attention of governments.

A. Masculinity ratio

Ordinarily, the biological average ratio of males to females at birth is estimated at 105 but, given equal rearing and medical care, females in the long run tend to outnumber males. In normal circumstances, therefore, one may expect a masculinity ratio of close on 100. If the observed masculinity ratio of a country is more than 100, one or more of the following factors may explain the variation: a higher mortality rates of females, under-enumeration of females, over-enumeration of males, and immigration of males. Moreover, the possibility of a masculinity ratio higher than 105 at birth cannot be ruled out.

For the countries in the ECAFE region, masculinity ratios have been computed (see table 15) on the basis of populations enumerated in the postwar census years. It is observed that only eight countries Indonesia, Japan, Mongolia (in one out of two census years), Nepal (in two out of three census years), Thailand (in one out of three census years), the Democratic Republic of Viet-Nam, the Khmer Republic and New Zealand (in one out of three census years) - show a masculinity ratio of less than 100. All other countries shown in table 15 have masculinity ratios exceeding 100.

The lowest ratio of 93.4 is observed for the Democratic Republic of Viet-Nam, while Nauru has the highest, at 189.4. In both these countries there are special circumstances. The masculinity ratio of Viet-Nam is affected by, among other factors, war casualties and that of Nauru by male-selective immigration.

^{17/} S.A. Meegama, "Malaria eradication and its effect on mortality levels" *Population Studies*, vol. XXI, No. 3, November 1967, pp. 207-237.

^{18/} UNESCO Regional Office for Education in Asia, *Progress of Education in the Asian Region: 4 Statistical Review*, Bangkok, 1969, table A 4.

The predominance of high masculinity ratios in the region can probably be attributed to higher mortality rates and greater under-enumeration of females than of males. Over-enumeration of males cannot be discounted but is probably less common. Unusual masculinity ratios may also be a reflection of the general quality and coverage of the census enumeration. However, in general, a declining trend is noted for countries which have high masculinity ratios. Increase in the ratios of some countries can probably be explained by immigration. The pattern of sex ratios in the region, however, does imply that a greater potential exists for the decrease of female mortality rates which, in turn, could increase the potential for accelerating birth rates.

B. Age composition

The age composition of the population of a country is a reflection of its past trends in fertility, mortality and migration, but fertility trends are by far the most important determinant of the age structure. A large proportion of children widens the base of the age pyramid and reflects the prevalence of high fertility rates in the past. Fertility differentials among countries can be inferred from their age compositions if data are of sufficient reliability. The shape of an age pyramid is also affected by inaccuracies and deficiencies in age data.

Table 8 shows the age composition of the total population of the region, while table 16 gives the age composition of the countries of the region. The data are presented in selected broad age groups for 1970 and 1980 for the region, and for 1960, 1970 and 1980 for countries for which data were available.

It is estimated that the number of pre-school age children will grow by about 50 million by the end of the current decade, increasing the 1970 figure of 306 million to 356 million in 1980. The gain in this age group is of special concern to those providing for health services and future development. As a substantial proportion of these children in developing countries of the region are already suffering from malnutrition, a further increase in their number deserves special consideration. The survivors of these children will be the future labour force, and malnutrition experienced by them in their early years may have an adverse effect on their physical and mental development and their productivity when they enter the working ages.

The estimated population of school-age children (5-14 yr) is 484 million in 1970 and will expand to 609 million in 1980, adding 125 million over the period of a decade. This increase, amounting to 25.8 per cent, will be greater than the growth of the total population. Such a large addition in the number of school-age children in a region in which school enrolment ratios are already low will place a severe burden on the meagre resources of developing countries.

Children of ages 0-14 yr at present comprise about 40 per cent of the total population of the region. There is a possibility of a slight decrease in this proportion by the year 1980. Compared with 28 per cent in the more developed regions and 25 per cent in Europe, however, this proportion is very high and places a heavy dependency burden on the supporters.

The youth population (15-24 yr) was estimated at 379 million in 1970 and is

likely to increase to 469 million by 1980, implying the net addition of 90 million. As educational and training facilities in most developing countries of the region are inadequate to meet current demands, this increase will have serious implications for countries in which high rates of underemployment and unemployment already prevail. The children who will enter the youth ages are already born and deserve the immediate attention of government administrators and planners.

The age group 15-49 yr, particularly its female component, deserves special consideration by those concerned with family planning. The female population in this reproductive age group will grow from 474 million in 1970 to 593 million in 1980. The net addition of 119 million females of reproductive age is particularly significant, because its relative increase during the decade will be higher than that of the total population, implying that the fertility potential will be accelerated by the end of the decade.

The anticipated increase in the population of working age, 15-59 yr, from 1,087 million in 1970 to 1,372 million by the end of the decade is important, as it shows a gain of about 285 million, implying the need for higher capital investment and the creation of additional jobs. The countries of the region are already faced with problems of underemployment and unemployment, and unless special efforts are made this addition will aggravate those problems.

The figures of dependency ratio shown in the last column of table 8 are about one-fourth higher than those for the more developed regions, implying that, in spite of underemployment, unemployment and low wages, the economically active population will have to bear a heavy burden of dependency.

Finally, the population of older persons, age 60 yr. and over, will increase from 117 million in 1970 to 158 million in 1980. With the lengthening of the expectation of life, this group will grow at a much faster rate than the rest of the population. Significant investments in facilities to meet the needs of older persons and additional funds for their pensions and social security will have to be provided.

The gains of population in various broad age groups differ considerably from the increase of total population. Such variations must be taken into account in the preparation of development and family planning programmes.

Population distribution and urbanization

In recent years, the concept of planned family size has gained general acceptance wherever it has been introduced and encouraged. Now there appears to be a tentative recognition of the value of planning at the national and sub-national levels, so that extremely high concentrations, uneconomic dispersion and other forms of maldistribution may be replaced by a more balanced distribution of population. To accomplish this, data concerning quality of land and resources, the level of technology, and productivity need to be related to population characteristics and trends, but unfortunately such information is not yet well developed.

A. Distribution

Average population densities, admittedly crude indicators of distribution, may yield general inferences as to the extent of population pressures. However, an idea of the situation and particularly of its intensification during the remainder of the century may be obtained from table 17. In this table, the areas remain the same throughout the period. The availability of new land is less likely, but the possibility of loss of good land to urban areas, housing for the growing population in the rural areas, industries, highways and other accompaniments of industrialization is increasing with the increase of population.

Some countries of the region, even apart from Singapore and Hong Kong, are among the most densely inhabited in the world; Bangladesh is the outstanding example. Others may have what seems to be an equitable ratio between population and area, but when arable land is considered, a less favourable picture is presented. Extreme cases are Indonesia, Japan, the Republic of Korea and the Democratic People's Republic of Korea. The problem of maldistribution within each country may even be more serious. For example, the island of Java in Indonesia is one of the most densely settled areas in the world, while several other islands are sparsely populated. Similar examples may be found in other countries.

B. Urbanization

By the end of the century, the proportion of urban population in the ECAFE region will probably increase from about 25 per cent of the total population in 1970 to about 44 per cent in 2000, as shown in table 18. Compared with other major regions of the world, this region has a low level of urbanization, but in numbers its urban population exceeds the total population of each of the other continents.

Differences in prospective urbanization in the two main sectors of the Asian part of ESCAP during the remainder of this century offer a striking contrast. In this region it is estimated that the pace of China's urbanization will be about the same as that for the Asian part of ECAFE as a whole, while the highly urbanized countries of Hong Kong, Japan and, to a lesser degree, the Democratic Peoples' Republic of Korea and the Republic of Korea, will have slowed considerably. For all of south Asia, it is conceivable that urban numbers will almost quadruple, from about 210 million in 1970 to 865 million in 2000. The number of urban residents in east Asia will increase roughly by one and one-third, or by possibly 390 million persons.

Excluding the highly urbanized countries of Japan, Hong Kong and Singapore, the urban proportion in roughly half of the remaining countries will about double by the end of the century, may possibly increase somewhat more steeply in India, Indonesia and Sri Lanka, and may even triple in Bangladesh and Nepal. The increase in the proportion for Iran, the Democratic People's Republic of Korea and the Republic of Korea may be 50 per cent, while for China, Pakistan and The Philippines it may be around 65 per cent.

In some instances, countries may have rapid urbanization forced upon

them, not so much as a result of industrial development as from growing pressure of numbers in a relatively small area. Sri Lanka has so far had a very slow rate of urban increase, but its island character limits opportunities for expansion in rural areas. On the other hand, the Republic of Korea has a shortage of arable land.

In other countries an increase in the numbers of rural inhabitants aggravates underemployment and unemployment, and further depresses general living conditions in the rural areas. The exodus from these areas terminates in urban centres which are already socially and economically inadequate and overcrowded.

Another factor which may increase the rate of urbanization is the impact of modern technology on sizable village settlements, transforming them into centres having some of the attributes of urban localities. Such settlements may also be on the fringes of cities and be absorbed by them.

The problems of urbanization are not confined to the developing countries of the region. The industrialized countries likewise are seriously concerned about social and environmental conditions related to extremely high concentrations of population.

The estimated total urban population of the ECAFE region in 1970 is 507 million and this figure is likely to increase to 737 million in 1980 and 1,561 million in 2000. The rural population will increase from 1,487 million in 1970 to 1,759 million in 1980 and 2,007 million in 2000. Although both urban and rural populations will increase between 1970 and 2000; the urban population will increase at a much faster rate and will triple itself by 2000, while the rural population will increase by 35 per cent. The absolute increase in the urban population will be 534 millions greater than the total growth of 520 million in the rural population. The net addition of 1,054 million to the urban population during the last three decades of the century provides another challenge to government planners and administrators. Most of the large cities in the region are already faced with serious problems of slums, traffic congestion and polluted environment. The net addition to the rural population is much smaller, but 520 million is still a large number. In most of the developing countries rural areas already have fewer health and educational facilities and substandard housing, and what effect this addition will have depends on the countries' resources.

These variations in the patterns of distribution and the problems associated with the increase in the urban and rural populations of the region emphasize the great need for "intensive research on individual countries in order to assess the dynamics underlying the urbanization process in each, and the implications for future development", as was pointed out at a recent ECAFE regional seminar. ^{19/}

^{19/} *Report of the Regional Seminar on the Ecological implications of Rural and Urban Population Growth*, 25 August - 3 September 1971 (POP/APC. 2/BP/11).

Table 13. (continued)

Region or country	1950	1960	1970	1972	1975	1980	1985	1990	2000
Brunei									
A	46	84	118	126	139	164	187	213	267
B	46	84	132	140	153	177	203	229	280
Burma									
A	18,340	22,207	27,748	29,122	31,183	35,063	39,255	43,737	52,837
B	18,340	22,207	27,748	29,145	31,241	35,004	39,027	43,090	50,008
China									
A	540,343	646,557	773,654	800,777	841,462	911,323	983,993	1,048,051	1,178,106
B	540,343	646,557	759,224	781,191	814,140	868,531	912,837	949,943	953,753
Hong Kong									
A	1,974	3,075	4,168	4,051	4,712	5,314	5,976	6,293	6,937
B	1,974	3,075	3,857	4,386	4,343	4,866	5,407	5,882	6,370
India ^{a/}									
A	359,250	432,750	554,577	585,759	632,533	717,380	807,566	897,642	1,080,523
B	359,250	432,750	538,710	563,480	600,635	659,906	710,910	754,602	833,556
Indonesia									
A	76,700	94,206	121,198	128,852	140,334	101,362	183,815	209,595	261,936
B	76,700	94,206	116,542	122,158	130,576	144,168	156,078	166,491	185,739
Iran									
A	16,585	21,500	28,358	30,276	33,152	38,769	45,050	50,491	61,538
B	16,585	21,500	28,238	29,910	32,419	36,679	40,696	44,275	49,885
Japan									
A	82,935	93,220	103,499	106,079	109,948	116,347	121,346	125,110	132,753
B	82,935	93,220	103,409	105,843	109,494	115,251	119,461	122,600	127,849
Khmer Republic									
A	4,074	5,440	7,102	7,577	8,289	9,724	11,339	13,004	16,385
B	4,074	5,440	7,102	7,571	8,273	9,591	11,011	12,458	15,038

^{a/} Excluding Kashmir and Jammu, the final status of which has not yet been determined; also Goa, Damau and Diu, which became part of India in December 1961. For 1951, also excluding data for part B total areas of Assam where census could not be taken, and settlements of Karikal, Mahe, Pondichery and Yanaam, which did not become part of India until 1 November 1954.

Table 13 (continued)

Region or country	1950	1960	1970	1972	1975	1980	1985	1990	2000
Korea, Democratic People's Republic of									
A	9,740	10,526	13,892	14,705	15,924	18,207	20,721	22,950	27,476
B	9,740	10,526	13,892	14,410	15,188	16,362	17,368	18,254	20,163
Korea, Republic of									
A	20,356	24,695	32,107	33,749	36,212	40,831	45,943	50,310	59,175
B	20,356	24,695	31,319	32,488	34,242	36,888	39,155	41,152	45,458
Laos									
A	1,325	1,805	2,985	3,164	3,407	3,901	4,449	4,957	5,988
B	1,325	1,805	2,985	3,155	3,410	3,877	4,366	4,844	5,733
Malaysia									
A	6,100	8,108	10,787	11,449	12,441	14,342	16,442	18,319	22,130
B	6,100	8,108	10,389	10,389	11,527	12,664	13,710	14,553	16,075
Mongolia									
A	732	953	1,285	1,371	1,499	1,739	1,998	2,291	2,887
B	732	953	1,231	1,280	1,353	1,479	1,609	1,742	2,021
Nepal									
A	8,000	9,180	11,258	11,799	12,611	14,136	15,788	17,591	21,251
B	8,000	9,180	11,086	10,548	12,240	13,514	14,775	15,995	18,381
Pakistan ^{b/}									
A	34,127 ^{c/}	45,983 ^{c/}	63,712 ^{c/}	68,535	75,775	89,547	105,165	116,985	141,181
B	34,127	43,850	55,587	58,265	62,281	69,440	76,668	82,187	90,786
Philippines									
A	20,316	27,410	38,114	41,007	45,347	54,095	64,023	73,425	92,513
B	20,316	27,410	37,138	39,421	42,845	48,475	53,783	58,513	66,581
Singapore									
A	1,022	1,634	2,105	2,208	2,363	2,645	2,959	3,116	3,435
B	1,022	1,634	2,075	2,162	2,291	2,517	2,739	2,950	3,259

^{b/} Excluding data for Kashmir and Jammu, the final status of which has not yet been determined, Junagardh Manavadar, Gilgit and Baltistan.
For 1951 also excluding data for Gwadar acquired from Muscat and Oman on 8 September 1958.

^{c/} Excluding East Pakistan.

Table 13. (continued)

Region or country	1950	1960	1970	1972	1975	1980	1985	1990	2000
Sri Lanka									
A	7,678	9,890	12,603	13,244	14,206	15,931	17,725	19,187	22,156
B	7,678	9,890	12,382	12,924	13,738	15,020	16,181	17,175	18,972
Thailand									
A	19,635	26,392	36,161	38,717	42,550	49,775	57,732	65,086	80,016
B	19,635	26,392	34,425	36,464	39,522	44,498	49,130	53,188	59,928
Viet-Nam, Democratic Republic of									
A	12,973	16,100	21,154	22,040	23,370	25,645	28,163	31,193	37,344
B	12,973	16,100	21,154	22,035	23,356	25,661	27,917	32,399	35,789
Viet-Nam, Republic of									
A	11,627	14,100	17,952	18,724	19,883	21,763	23,900	26,471	31,691
B	11,627	14,100	17,952	18,699	19,821	21,777	25,775	29,913	33,043
Oceania									
Australia									
A	8,219	10,315	12,514	13,053	13,862	15,365	16,985	18,537	21,180
B	8,219	10,315	12,484	12,977	13,716	14,996	16,314	17,403	19,224
British Solomon Islands									
A	109	124	163	172	185	211	239	267	323
B	109	124	163	172	185	211	236	261	302
Cook Islands									
A	15	18	24	26	28	34	40	45	54
B	15	18	24	26	28	33	38	42	49
Fiji									
A	289	394	540	574	624	715	823	920	1,080
B	289	394	540	560	590	645	699	745	823
Nauru									
A	3	4	7	8	9	12	16	19	25
B	3	4	7	8	9	11	14	17	20

Table 13. (continued)

Region or country	1950	1960	1970	1972	1975	1980	1985	1990	2000
New Zealand									
A	1,908	2,372	2,860	2,964	3,120	3,420	3,760	4,106	4,665
B	1,908	2,372	2,860	2,948	3,079	3,366	3,662	3,906	4,315
Papua New Guinea									
A	1,675	1,905	2,421	2,553	2,750	3,126	3,590	4,044	4,939
B	1,675	1,905	2,421	2,553	2,753	3,114	3,506	3,981	4,620
Tonga									
A	48	63	87	93	103	123	146	164	200
B	48	63	87	93	102	118	136	152	176
Western Samoa									
A	79	107	148	157	170	194	222	252	310
B	79	107	148	156	169	191	215	238	276

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Table 14. Population growth rates in countries
of the ECAFE region, 1950 – 2000

Region or country	1950- 1960	1960 1970	1970- 1975	1975- 1980	1980- 1985	1985- 1990	1990- 2000	1950- 2000
ECAFE region								
A	1.9	2.2	2.3	2.3	2.1	1.8	1.6	2.0
B	1.9	2.0	1.9	1.7	1.4	1.1	0.6	1.5
Asian part								
A	1.9	2.2	2.3	2.2	2.1	1.8	1.6	2.0
B	1.9	2.0	1.9	1.7	1.4	1.1	0.7	1.5
Oceania part								
A	2.2	2.1	2.1	2.2	2.2	2.0	1.4	1.9
B	2.2	2.0	2.6	1.9	1.8	1.5	1.1	1.8
Asia								
Afghanistan								
A	1.5	2.1	2.6	2.7	2.6	2.5	2.2	2.2
B	1.5	2.1	2.6	2.5	2.3	1.9	1.5	2.0
Bangladesh								
A	2.5	3.1	3.4	3.3	3.2	2.3	1.9	2.7
B	2.0	2.1	2.2	2.1	1.9	1.5	1.0	1.8
Bhutan								
A	1.5	2.2	2.2	2.2	2.2	2.2	1.9	2.0
B	1.5	2.2	2.2	2.2	2.2	2.0	1.6	1.9
Brunei								
A	6.2	3.5	3.0	3.0	2.7	2.6	2.3	3.6
B	6.2	4.6	3.0	3.0	2.7	2.5	2.0	3.7
Burma								
A	1.9	2.3	2.4	2.3	2.3	2.2	1.9	2.1
B	1.9	2.3	2.4	2.3	2.2	2.0	1.5	2.0
China								
A	1.8	1.8	1.7	1.6	1.6	1.3	1.2	1.6
B	1.8	1.6	1.4	1.3	1.0	0.8	0.4	1.1
Hong Kong								
A	4.5	3.1	2.5	2.4	2.4	1.0	1.0	2.5
B	4.5	2.3	2.4	2.3	2.1	1.8	0.8	2.4
India								
A	1.9	2.5	2.7	2.6	2.5	2.1	1.9	2.2
B	1.9	2.2	2.2	1.9	1.5	1.2	1.0	1.7
Indonesia								
A	2.1	2.6	3.1	2.7	2.6	2.7	2.3	2.5
B	2.1	2.2	2.3	2.0	1.6	1.3	1.1	1.8

Source: Table 13.

Table 14. (continued)

Region or countries	1950-1960	1960-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-2000	1950-2000
Iran								
A	2.6	2.8	3.2	3.2	3.1	2.3	2.0	2.7
B	2.6	2.8	2.8	2.5	2.1	1.7	1.2	2.2
Japan								
A	1.2	1.1	1.2	1.1	0.8	0.6	0.6	0.9
B	1.2	1.0	1.2	1.0	0.7	0.5	0.4	0.9
Khmer Republic								
A	2.9	2.7	3.1	3.3	3.1	2.8	2.3	2.8
B	2.9	2.7	3.1	3.0	2.8	2.5	1.9	2.7
Korea, Democratic People's Republic of								
A	0.8	2.8	2.8	2.7	2.6	2.1	1.8	2.1
B	0.8	2.8	1.8	1.5	1.2	1.0	1.0	1.5
Korea, Republic of								
A	1.9	2.7	2.4	2.4	2.4	1.8	1.6	2.2
B	1.9	2.4	1.8	1.5	1.2	1.0	1.0	1.6
Laos								
A	3.1	5.2	2.7	2.8	2.7	2.2	1.9	3.1
B	3.1	5.2	2.7	2.6	2.4	2.1	1.7	3.0
Malaysia								
A	2.9	2.9	2.9	2.9	2.8	2.2	1.9	2.6
B	2.9	2.5	2.1	1.9	1.6	1.2	1.0	2.0
Mongolia								
A	2.7	3.0	3.1	3.0	2.8	2.8	2.3	2.8
B	2.7	2.6	1.9	1.8	1.7	1.6	1.5	2.1
Nepal								
A	1.4	2.1	2.3	2.3	2.3	2.2	1.9	2.0
B	1.4	1.9	2.0	2.0	1.8	1.6	1.4	1.7
Pakistan								
A	3.0	3.2	3.5	3.4	3.3	2.2	1.9	2.9
B	2.5	2.4	2.3	2.2	2.0	1.4	1.0	2.0
Philippines								
A	3.0	3.4	3.5	3.6	3.4	2.3	2.1	3.1
B	3.0	3.1	2.9	2.5	2.1	1.7	1.3	2.4
Singapore								
A	4.8	2.6	2.3	2.3	2.3	1.0	1.1	2.5
B	4.8	2.4	2.0	1.9	1.7	1.5	1.0	2.4
Sri Lanka								
A	2.6	2.5	2.4	2.3	2.2	1.6	1.5	2.1
B	2.6	2.3	2.1	1.8	1.5	1.2	1.0	1.8
Thailand								
A	3.0	3.2	3.3	3.2	3.0	2.4	2.1	2.9
B	3.0	2.7	2.8	2.4	2.0	1.6	1.2	2.3

Table 14. (continued)

Region or country	1950-1960	1960-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-2000	1950-2000
Viet-Nam, Democratic Republic of								
A	2.2	2.8	2.0	1.9	1.9	2.1	1.8	2.1
B	2.2	2.8	2.0	1.9	1.7	1.5	1.0	2.0
Viet-Nam, Republic of								
A	2.0	2.4	2.0	1.9	1.9	2.1	1.8	2.0
B	2.0	2.4	2.0	1.9	1.7	1.5	1.0	2.1
Oceania								
Australia								
A	2.3	2.0	2.1	2.1	2.0	1.8	1.3	1.9
B	2.3	1.9	1.9	1.8	1.7	1.3	1.0	1.7
British Solomon Islands								
A	1.3	2.8	2.6	2.7	2.5	2.2	1.9	2.2
B	1.3	2.8	2.6	2.6	2.3	2.0	1.5	2.1
Cook Islands								
A	1.8	2.9	3.1	4.4	3.3	2.4	1.8	2.7
B	1.8	2.9	3.0	3.3	3.0	2.2	1.5	2.4
Fiji								
A	3.2	3.2	2.9	2.8	2.8	2.3	1.6	2.6
B	3.2	3.2	1.8	1.8	1.6	1.3	1.0	2.1
Nauru								
A	2.9	5.8	5.2	5.9	5.9	3.5	2.8	4.3
B	2.9	5.8	5.2	5.0	4.5	3.5	1.5	3.9
New Zealand								
A	2.2	1.9	1.8	1.9	1.9	1.8	1.3	1.8
B	2.2	1.9	1.8	1.8	1.7	1.3	1.0	1.6
Papua New Guinea								
A	1.3	2.4	2.6	2.6	2.8	2.4	2.0	2.2
B	1.3	2.4	2.6	2.5	2.4	2.0	1.5	2.1
Tonga								
A	2.8	3.3	3.4	3.6	3.5	2.4	2.2	2.9
B	2.8	3.3	3.2	3.0	2.9	2.2	1.5	2.6
Western Samoa								
A	3.1	3.3	2.8	2.7	2.7	2.6	2.1	2.8
B	3.1	3.3	2.7	2.5	2.4	2.0	1.5	2.5

Table 15. Enumerated population, by sex and masculinity ratio, in countries of the ECAFE region, selected years of in the postwar period

Region, country and census year	Both sexes	Male	Female	Masculinity ratio (M/F x 100)
<u>Asia</u>				
Bangladesh				
1951	42,062,000	22,007,000	20,055,000	109.7
1961 ^{a/}	50,840,000	26,349,000	24,491,000	107.6
Brunei				
1947	40,657	21,508	19,149	112.3
1960	83,877	43,676	40,201	108.6
1971	136,256	72,772	63,484	114.6
Burma				
1953 (based on a partial census)				104.0
China				
1953 ^{b/}	582,603,417	297,553,518	276,652,422	107.6
Hong Kong				
1961	3,133,131	1,610,650	1,522,481	105.8
1971*	3,936,630	2,000,602	1,936,028	103.3
India ^{c/}				
1951	356,741,669	183,261,664	173,480,005	105.6
1961	434,884,939	224,008,841	210,876,098	106.2
1971	547,949,809	283,252,214*	264,115,712*	107.2
Indonesia				
1961 ^{d/}	96,318,829	47,493,854	48,824,975	97.3
1971	118,459,845	58,279,166	60,180,679	96.8
Iran				
1956 ^{e/}	18,954,704	9,644,944	9,309,760	103.6
1966	25,785,210	12,981,665	12,097,258	107.3
Japan				
1950	83,199,637	40,811,760	42,387,877	96.3
1960	93,418,501	45,877,602	47,540,899	96.5
1970	103,720,060	50,915,658*	52,787,894	96.5
Khmer Republic				
1962	5,728,771	2,862,939	2,865,832	99.9
Korea, Republic of				
1955	21,526,374	10,766,777	10,759,597	100.1
1966	29,207,856	14,700,966	14,506,980	101.3
1970*	31,460,994	15,785,705	15,675,289	100.7
Malaysia				
1970*	10,421,865	5,252,220*	5,169,645*	101.6
East Malaysia, Sabah				
1951	334,141	172,353	161,788	106.5
1960	454,421	236,616	217,805	108.6
1970	655,295	339,431	315,864	107.5

Table 15. (continued)

Region, country and census year	Both sexes	Male	Female	Masculinity ratio (M/F x 100)
Sarawak				
1947	546,385	281,170	265,215	106.0
1960	744,529	375,846	368,683	101.9
1970	974,880	490,090	484,790	101.1
West Malaysia				
1947	4,920,060	. . . .	. . . .	. . . .
1957	6,278,758	3,237,579	3,041,179	106.5
1970*	8,791,690	4,422,699	4,368,991	101.2
Mongolia				
1956	845,481	420,291	425,190	98.8
1963 ^{f/}	1,017,100	510,300	508,500	100.4
1969	1,197,600	. . . .	. . . .	. . . .
Nepal				
1952 - 28 V 1954	8,256,625	4,050,607	4,184,472	96.8
1961 ^{g/}	9,412,996	4,636,033	4,776,963	97.0
1971	11,289,968	5,658,323	5,631,845	100.5
Pakistan ^{h/}				
1951 ^{i/}	33,780	18,198	15,582	116.8
1961 ^{a j/}	42,880	22,960	19,921	115.3
Philippines				
1948	19,234,182	9,651,195	9,582,987	100.7
1960	27,087,685	13,662,869	13,424,816	101.8
1970	36,944,847	. . . .	. . . .	. . . .
Singapore				
1947	938,144	515,000	423,200	121.7
1957	1,445,929	762,760	683,169	111.7
1970	2,074,507	1,062,127	1,012,380	104.9
Sri Lanka				
1953 ^{k/}	8,154,580	4,268,730	3,829,165	111.5
1963 ^{l/}	10,582,064	5,498,674	5,083,390	108.2
Thailand				
1947	17,442,689	8,722,155	8,720,534	100.0
1960	26,257,916	13,154,149	13,103,767	100.4
1970*	34,152,000	17,002,000	17,150,000	99.1
Viet-Nam, Democratic Republic of				
1963 ^{m/}	15,916,955	7,687,814	8,229,141	93.4
Khmer Republic				
1962	5,728,771	2,862,939	2,865,832	99.9

Table 15 (continued)

Region, country and census year	Both sexes	Male	Female	Masculinity ratio (M/F x 100)
Oceania				
Australia				
1954	8,986,530	4,546,118	4,440,412	102.4
1961	10,508,186	5,312,252	5,195,934	102.2
1971*	12,755,638	6,412,711	6,342,127	101.1
British Solomon Islands				
1959 ^{n/}	124,076	65,532	58,544	111.9
1970	160,998	85,179	75,819	112.3
Cook Islands				
1951	15,079	7,827	7,252	107.9
1961	18,378	9,454	8,924	105.9
1971	21,217	...	...	...
Fiji				
1956	345,737	178,475	167,262	106.7
1966	476,727	242,747	233,980	103.7
Nauru				
1961	4,613	3,019	1,594	189.4
1966	6,057	3,703	2,354	157.3
New Zealand				
1951	1,939,472	973,968	965,504	100.9
1961	2,414,984	1,213,376	1,201,608	101.0
1971	2,862,631	1,430,856	1,431,775	99.9
Papua New Guinea				
1966* ^{o/}	2,184,986	1,140,359	1,044,627	109.2
Tonga				
1956	56,838	28,938	27,900	103.7
1966	77,429	39,837	37,592	106.0
Western Samoa				
1951	84,909	43,790	41,119	106.5
1961	114,427	58,785	55,642	105.6
1971	146,461	75,837	70,624	103.0

Source: United Nations Demographic Yearbook 1970, (United Nations Publication, (Sales No. E/F .71.XIII.I) pp. 414-417; and communications from the countries concerned.

Note: * Provisional.

a/ Excludes non-Pakistanis, numbering 111 369 in total Bangladesh and Pakistan.

b/ Population registered. Figure for "Both sexes" includes an estimate of 8,397,477 for persons living in outlying areas where local registration offices were not established. No adjustment has been made for 0.1 per cent estimated net under-enumeration. (Source: Hsin Hua Monthly)

Table 15. (Continued)

- c/ Excluding Kashmir and Jammu, the final status of which has not yet been determined; also Goa, Damau and Diu, which became part of India in December 1961. For 1951, also excluding data for Part B total areas of Assam where census could not be taken, and settlements of Karikal, Mahe, Pondichery and Yanaan, which did not become part of India until 1 November 1954.
- d/ Excluding West Irian, total population estimated at 750,000 in 1961.
- e/ Male and female data are settled population only.
- f/ Data have been rounded
- g/ Data for both sexes include 21,546 persons not classified by sex.
- h/ Excluding Kashmir and Jammu, the final status of which has not yet been determined, Junagardh Manavadar, Gilgit and Baltistan. Also excluding East Pakistan.
- i/ Data include an estimate of 1,759,932 for population of frontier regions, excluding Mehamned Agency. Data for both sexes include an estimate of 24,000 for population of Mehamned Agency and also an adjustment for under-enumeration in urban areas amounting to 5 per cent or 390,637 persons. Including estimated population of 13,000 for Gwadur.
- j/ Excluding adjustment for under-enumeration. A considerable number of nomads may also be excluded.
- k/ Data for both sexes include 0.7 per cent adjustment for under-enumeration.
- l/ Excluding adjustment for under-enumeration.
- m/ **Source: Nhan Dan (The People) 2 November 1960, Democratic Republic of Viet-Nam.**
- n/ Estimate based on a sample survey covering 100 per cent of population of Honiara and non-Melanesian population outside Honiara (total of 9,074 persons), and 27.7 per cent sample of Melanesian population outside Honiara.
- o/ Estimate based on results of a 10 per cent sample survey of rural villages and complete enumeration of all other areas.

**Table 16. Population, by broad age group, for countries
of ECAFE region, 1960-1980
(percentages)**

Country and year	0-4 yr.	5-14 yr.	0-14 yr.	15-24 yr.	15-49 yr.	15-59 yr.	60 yr and over	Dependency ratio
Afghanistan								
1960	16.7	25.2	41.9	19.4	47.8	53.5	4.6	0.87
1970	18.4	24.8	43.2	19.0	46.9	52.4	4.4	0.91
1980	17.8	27.5	45.3	18.1	44.9	50.3	4.4	0.99
Burma								
1960	15.5	22.9	38.4	18.9	50.2	56.9	4.8	0.76
1970	15.9	24.4	40.3	17.5	47.3	54.0	5.7	0.85
1980	15.3	25.0	40.3	18.7	46.7	53.4	6.3	0.87
China								
1960	15.1	24.1	39.2	18.9	48.4	54.8	6.0	0.82
1970	13.5	23.2	36.7	19.5	50.2	57.0	6.4	0.76
1980	11.8	22.0	33.8	19.1	51.7	59.1	7.2	0.69
Hong Kong								
1960	16.0	24.9	40.9	11.6	47.5	54.3	4.9	0.84
1970	12.5	25.2	37.7	19.9	47.4	55.7	6.6	0.80
1980	12.8	21.2	34.0	20.0	48.5	57.3	8.8	0.75
India								
1960	16.2	24.9	41.1	18.2	48.1	53.9	5.0	0.86
1970	16.9	24.9	41.8	18.7	47.0	53.1	5.1	0.88
1980	15.6	26.3	41.9	18.6	46.3	52.5	5.6	0.90
Indonesia								
1960	17.6	26.6	44.2	19.5	46.4	51.8	4.0	0.93
1970	18.5	26.1	44.6	19.3	46.1	51.2	4.1	0.95
1980	17.0	27.8	44.8	18.9	45.6	50.8	4.4	0.97
Iran								
1960	18.3	26.9	45.2	16.9	42.7	48.8	5.9	1.05
1970	18.0	27.6	45.6	19.5	43.5	48.9	5.5	1.04
1980	18.0	27.5	45.5	19.6	44.6	49.5	5.0	1.02
Japan								
1960	8.5	21.6	30.1	18.9	52.6	61.0	8.9	0.64
1970	8.6	15.4	24.0	19.3	56.6	65.5	10.5	0.53
1980	8.7	15.9	24.6	13.6	52.2	63.0	12.4	0.59
Khmer Republic								
1960	18.6	26.9	45.5	17.5	44.9	50.4	4.1	0.98
1970	17.7	27.1	44.8	19.5	45.2	50.6	4.6	0.98
1980	18.1	26.9	45.0	19.2	44.9	50.2	4.8	0.99
Korea, Democratic People's Republic of								
1960	18.9	24.8	43.7	18.0	45.2	50.9	5.4	0.96
1970	16.2	27.7	43.9	18.3	44.8	50.6	5.5	0.98
1980	15.3	25.5	40.8	20.7	47.7	53.4	5.8	0.87

Table 16. (Continued)

Country and year	0-4 yr.	5-14 yr.	0-14 yr.	15-24 yr.	15-49 yr.	15-59 yr.	60 yr. and over	Dependency ratio
Korea, Republic of								
1960	18.9	24.8	43.7	18.0	45.2	50.9	5.4	0.96
1970	15.0	28.1	43.1	18.6	45.5	51.3	5.6	0.95
1980	14.2	23.9	38.1	21.7	49.9	55.9	6.1	0.79
Laos								
1960	16.7	25.2	41.9	18.8	47.8	53.6	4.5	0.87
1970	16.5	25.9	42.4	18.7	46.7	52.6	4.9	0.90
1980	16.6	25.8	42.4	19.2	46.4	52.3	5.4	0.91
Malaysia								
1960	18.6	27.9	46.5	17.4	43.4	49.0	4.5	1.04
1970	15.8	28.2	44.0	20.5	45.7	51.1	4.9	0.96
1980	15.9	25.2	41.1	20.8	48.5	53.7	5.2	0.86
Mongolia								
1960	17.3	26.5	43.8	19.2	46.2	51.4	4.8	0.95
1970	17.3	26.4	43.7	19.1	46.1	51.4	4.9	0.95
1980	16.4	26.7	43.1	19.2	46.2	51.7	5.1	0.93
Nepal								
1960	16.9	24.8	41.7	17.2	47.5	53.6	4.7	0.87
1970	16.7	25.7	42.4	19.0	46.5	52.5	5.0	0.90
1980	16.0	25.8	41.8	19.5	46.5	52.9	5.3	0.89
Philippines								
1960	18.4	28.0	46.4	18.9	44.5	49.3	4.3	1.03
1970	18.3	28.0	46.3	19.5	44.4	49.4	4.2	1.02
1980	18.6	27.8	46.4	19.4	44.6	49.2	4.4	1.02
Singapore								
1960	18.5	24.7	43.2	17.4	46.9	53.1	3.7	0.88
1970	13.4	27.4	40.8	18.8	46.4	53.5	5.6	0.87
1980	12.8	22.1	34.9	21.6	51.0	57.7	7.5	0.73
Sri Lanka								
1960	16.2	25.9	42.1	18.1	46.5	52.3	5.7	0.91
1970	14.6	25.5	40.1	19.7	47.8	53.9	6.0	0.86
1980	13.5	23.8	37.3	19.9	49.5	56.1	6.6	0.78
Thailand								
1960	18.4	26.3	44.7	18.3	45.4	50.8	4.5	0.97
1970	17.9	27.6	45.5	18.6	44.6	49.7	4.8	1.01
1980	16.9	27.4	44.3	19.7	45.4	50.8	4.9	0.97
Viet-Nam, Democratic Republic of								
1960	16.5	19.6	36.1	20.7	53.1	59.5	4.4	0.68
1970	15.1	26.1	41.2	14.3	45.6	52.5	6.2	0.80
1980	13.0	23.9	36.9	20.9	48.7	56.1	7.0	0.78
Viet-Nam, Republic of								
1960	16.6	18.7	35.3	20.1	52.0	58.7	5.9	0.70
1970	15.1	26.1	41.2	14.3	45.6	52.5	6.2	0.90
1980	13.0	23.9	36.9	20.9	48.7	56.1	7.0	0.78

Table 16. (Continued)

Country and year	0-4 yr	5-14 yr	0-14 yr	15-24 yr	15-49 yr	15-59 yr	60 yr and over	Dependency ratio
Oceania								
Australia								
1960	10.6	19.5	30.1	14.0	47.8	57.7	12.2	0.73
1970	9.4	19.3	28.7	17.5	48.9	58.9	12.3	0.70
1980	10.4	17.9	28.3	17.0	49.4	59.2	12.5	0.69
Fiji								
1960	19.3	28.7	48.0	19.0	44.2	48.2	3.8	1.07
1970	15.9	28.5	44.4	20.6	46.5	51.7	3.9	0.93
1980	14.4	25.0	39.4	21.4	50.5	55.8	5.0	0.80
New Zealand								
1960	12.2	20.7	32.9	14.1	45.3	54.9	12.2	0.82
1970	10.8	21.4	32.2	17.4	46.1	55.6	12.2	0.80
1980	11.9	19.6	31.5	18.0	47.5	56.4	12.2	0.77
Papua New Guinea								
1960	16.3	24.3	40.6	18.9	48.5	54.5	4.8	0.83
1970	16.4	25.5	41.9	18.3	46.8	52.9	5.2	0.89
1980	16.1	25.7	41.8	19.0	46.5	52.6	5.6	0.90

Source: Medium variant projections prepared by the United Nations Secretariat (designated as series A in this paper).

Table 17. Average population densities of the countries of the ESCAP region, 1970-2000

Country and year		Total population per square kilometre			Rural population per square kilometre	
		Total area	Agricultural land	Arable land	Agricultural land	Arable land
ASIA						
Total	1970	86	...	494 ^{a/}	...	370 ^{a/}
	1975	96	...	554 ^{a/}	...	406 ^{a/}
	1980	108	...	618 ^{a/}	...	438 ^{a/}
	1985	120	...	687 ^{a/}	...	466 ^{a/}
	1990	131	...	752 ^{a/}	...	484 ^{a/}
	2000	154	...	884 ^{a/}	...	500 ^{a/}
Afghanistan	1970	26	123	217	111	196
	1975	30	139	246	125	221
	1980	34	159	281	142	250
	1985	39	180	318	159	281
	1990	44	204	361	178	314
	2000	54	253	446	205	362
Bangladesh ^{b/}	1970	513	...	818	...	761
	1975	607	...	969	...	891
	1980	713	...	1,139	...	1,025
	1985	834	...	1,332	...	1,172
	1990	932	...	1,488	...	1,280
	2000	1,125	...	1,796	...	1,455
Bhutan	1970	18	...	...	...	...
	1975	20	...	...	...	...
	1980	22	...	...	...	...
	1985	25	...	...	...	...
	1990	28	...	...	...	...
	2000	33	...	...	...	...
Brunei	1970	20	...	169	...	74
	1975	24	...	199	...	80
	1980	28	...	234	...	84
	1985	32	...	267	...	87
	1990	37	...	304	...	87
	2000	46	...	381	...	76
Burma	1970	41	169	172	138	141
	1975	46	190	194	154	157
	1980	52	213	218	171	175
	1985	58	239	244	187	191
	1990	65	266	272	197	201
	2000	78	321	328	209	213

Table 17. (Continued)

Country and year		Total population per square kilometre			Rural population per square kilometre	
		Total area	Agricultural land	Arable land	Agricultural land	Arable land
China	1970	81	268	702	204	532
	1975	88	292	763	216	564
	1980	95	316	827	227	593
	1985	103	343	898	236	618
	1990	109	364	951	237	619
	2000	123	409	1,069	239	625
Hong Kong	1970	4,168	...	41,680	...	3,350
	1975	4,712	...	47,120	...	3,360
	1980	5,314	...	53,140	...	3,330
	1985	5,976	...	59,760	...	3,110
	1990	6,293	...	62,930	...	2,450
	2000	6,937	...	69,370	...	1,390
India	1970	170	321	347	257	278
	1975	194	366	396	288	313
	1980	220	415	449	315	341
	1985	247	467	506	336	364
	1990	275	519	562	353	382
	2000	331	625	677	356	386
Indonesia	1970	64	951	1,147	781	943
	1975	74	1,101	1,328	886	1,069
	1980	85	1,266	1,527	978	1,180
	1985	97	1,442	1,739	1,055	1,273
	1990	110	1,644	1,983	1,124	1,356
	2000	138	2,054	2,478	1,233	1,487
Iran	1970	17	155	245	92	145
	1975	20	181	286	103	163
	1980	24	212	335	112	177
	1985	27	246	389	119	189
	1990	31	275	436	124	196
	2000	37	336	531	124	196
Japan	1970	280	1,561	1,838	434	511
	1975	297	1,658	1,953	392	461
	1980	315	1,755	2,067	351	413
	1985	328	1,830	2,155	307	362
	1990	338	1,887	2,222	264	311
	2000	359	2,002	2,358	200	236
Khmer Republic	1975	46	233	278	201	240
	1980	54	273	326	231	276
	1985	63	319	381	263	315
	1990	72	365	436	294	351
	2000	91	460	550	345	412

Table 17. (Continued)

Country and year		Total population per square kilometre			Rural population per square kilometre	
		Total area	Agricultural land	Arable land	Agricultural land	Arable land
Korea, Democratic People's Republic of	1970	115	...	735	...	441
	1975	132	...	843	...	475
	1980	151	...	963	...	507
	1985	172	...	1,096	...	521
	1990	190	...	1,214	...	522
	2000	228	...	1,454	...	502
Korea Republic of	1970	326	1,372	1,384	823	830
	1975	368	1,548	1,561	874	882
	1980	415	1,745	1,760	924	932
	1985	466	1,963	1,980	940	948
	1990	511	2,150	2,169	927	935
	2000	601	2,529	2,551	872	880
Laos	1970	13	187	373	158	317
	1975	14	213	426	179	358
	1980	16	244	488	200	401
	1985	19	278	556	225	451
	1990	21	310	620	243	486
	2000	25	374	749	281	561
Malaysia	1970	32	...	302	...	166
	1975	37	...	348	...	176
	1980	43	...	402	...	181
	1985	49	...	461	...	184
	1990	55	...	513	...	187
	2000	67	...	620	...	198
Mongolia	1970	1	...	37	...	18
	1975	1	...	43	...	19
	1980	1	...	50	...	22
	1985	1	...	57	...	24
	1990	1	...	65	...	26
	2000	2	...	82	...	29
Nepal	1970	80	264	296	252	473
	1975	90	295	556	279	525
	1980	100	331	623	309	581
	1985	112	370	696	340	640
	1990	125	412	775	368	692
	2000	151	498	936	422	794
Pakistan	1970 ^{b/}	79	...	340	...	248
	1975	94	...	404	...	287
	1980	111	...	478	...	325
	1985	131	...	561	...	365
	1990	146	...	624	...	387
	2000	176	...	753	...	414

Table 17. (Continued)

Country and year		Total population per square kilometre			Rural population per square kilometre	
		Total area	Agricultural land	Arable land	Agricultural land	Arable land
Philippines	1970	127	405	446	277	304
	1975	151	482	530	318	350
	1980	180	575	633	360	396
	1985	213	681	749	401	441
	1990	245	781	859	430	472
	2000	308	984	1,082	459	504
Singapore	1970	3,508	21,050	21,050	...	...
	1975	3,938	23,630	23,630	...	...
	1980	4,408	26,450	26,450	...	...
	1985	4,932	29,590	29,590	...	...
	1990	5,193	31,160	31,160	...	...
	2000	5,725	34,350	34,350	...	...
Sri Lanka	1970	192	521	637	405	495
	1975	217	587	717	446	545
	1980	243	658	805	481	587
	1985	270	732	895	505	618
	1990	292	793	969	507	620
	2000	338	916	1,119	458	559
Thailand	1970	70	...	317	...	270
	1975	83	...	373	...	313
	1980	97	...	436	...	359
	1985	112	...	506	...	407
	1990	127	...	570	...	446
	2000	156	...	701	...	511
Viet-Nam, Democratic Republic of	1970	133	...	1,047	...	857
	1975	147	...	1,157	...	921
	1980	162	...	1,270	...	979
	1985	177	...	1,394	...	1,035
	1990	196	...	1,544	...	1,112
	2000	235	...	1,849	...	1,257
Viet-Nam, Republic of	1970	103	314	632	239	480
	1975	114	348	700	256	516
	1980	125	381	766	270	543
	1985	138	419	842	284	571
	1990	152	464	932	299	601
	2000	182	555	1,116	323	649

Table 17. (Continued)

Country and year		Total population per kilometre			Rural population per kilometre	
		Total area	Agricultural land	Arable land	Agricultural land	Arable land
OCEANIA						
Australia	1970	2	3	30	0.4	5.0
	1975	2	3	33	0.4	5.0
	1980	2	3	37	0.4	5.0
	1985	2	3	41	0.4	5.0
	1990	2	4	45	0.4	4.0
	2000	3	4	51	0.3	4.0
British Solomon Islands	1970	5	89	115	86	111
	1975	6	101	130	97	125
	1980	7	115	149	109	141
	1985	8	130	168	121	157
	1990	9	145	188	133	173
	2000	11	176	227	154	200
Cook Islands	1970	104	240	600	230	575
	1975	122	280	700	260	650
	1980	148	340	850	320	800
	1985	174	400	1,000	370	925
	1990	196	450	1,125	400	1,000
	2000	235	540	1,350	460	1,150
Fiji	1970	30	180	235	145	188
	1975	34	208	271	166	216
	1980	39	238	311	188	245
	1985	45	274	358	212	277
	1990	50	307	400	232	302
	2000	59	360	470	255	333
Nauru	1970	350	2,333	...	2,000	...
	1975	450	3,000	...	2,667	...
	1980	600	4,000	...	3,333	...
	1990	800	5,333	...	4,333	...
	2000	950	6,333	...	5,000	...
New Zealand	1970	11	21	367	4.4	77
	1975	12	23	400	4.4	76
	1980	13	25	438	4.3	75
	1985	14	28	482	4.3	75
	1990	15	30	526	4.2	73
	2000	17	34	598	4.0	68
Papua New Guinea	1970	5	1,513	1,641	1,495	1,595
	1975	6	1,719	1,833	1,691	1,804
	1980	7	1,954	2,084	1,917	2,045
	1985	8	2,244	2,393	2,188	2,333
	1990	9	2,528	2,696	2,431	2,593
	2000	11	3,087	3,293	2,868	3,059

Table 17. (Continued)

Country and year		Total population per kilometre			Rural population per kilometre	
		Total area	Agricultural land	Arable land	Agricultural land	Arable land
Tonga	1970	124	155	621	150	600
	1975	147	184	736	177	707
	1980	176	220	879	209	836
	1985	209	261	1,043	243	971
	1990	234	293	1,171	268	1,071
	2000	286	357	1,429	314	1,257
Western Samoa	1970	53	148	164	114	127
	1975	61	170	189	130	144
	1980	69	194	216	145	161
	1985	79	222	247	163	181
	1990	90	252	280	181	201
	2000	111	310	344	212	236

Sources: For total population, table 13; for 1970 estimates of urban and rural population, reference was made to United Nations, **Growth of the World's Urban and Rural Population**, 1920-2000, New York, 1969; Kingsley Davis, **World Urbanization 1950-1970**, vol I; **Basic data for Cities, Countries, and Regions**: Institute of International Studies, University of California, Berkeley (1969). Urban and rural population estimates after 1970 are highly conjectural.

For area, Food and Agriculture Organization of the United Nations, **FAO Production Yearbook**, (Rome, 1969), table 1. Total area includes area under inland water. "Agricultural area", in addition to arable land defined below, includes permanent meadows and pastures. Arable land includes land under permanent crops, land temporarily fallow, temporary meadows, land under market and kitchen gardens, fruit trees, vines, shrubs, and rubber plantations. Forested land includes all lands under natural or planted stands of trees of present or potential value. "Other" refers to unused but potentially productive area and built-on area, wasteland and other.

a/ Excluding Bhutan.

b/ Excluding East Pakistan.

Table 18. Total, urban and rural population estimates and projections for countries of the ECAFE region, 1970-2000

Country and year	Population					
	Total	Urban			Rural	
		Average increase Percentage	Thousands	Percentage	Average increase Thousands	percentage increase Percentage
Total ECAFE region						
1970	1,994,301		507,455	25.4	1,486,846	74.6
1975	2,235,041	2.3	604,179	27.0	1,630,862	73.0
1980	2,496,108	2.2	737,071	29.5	1,759,037	70.5
1985	2,774,517	2.1	905,584	32.6	1,868,933	67.4
1990	3,037,015	1.8	1,095,366	36.1	1,941,649	63.9
2000	3,568,468	1.6	1,561,491	43.8	2,006,977	56.2
Total Asian ECAFE region						
1970	1,975,537		494,461	25.0	1,481,076	75.0
1975	2,214,190	2.3	589,519	26.6	1,624,671	73.4
1980	2,472,908	2.2	720,538	29.4	1,752,370	70.6
1985	2,748,696	2.1	886,986	32.3	1,861,713	67.7
1990	3,008,661	1.8	1,074,653	35.7	1,934,008	64.3
2000	3,535,692	1.6	1,537,012	43.5	1,998,680	56.5
Afghanistan						
1970	16,978		1,647	09.7	15,331	90.3
1975	19,301	2.6	1,950	10.1	17,351	89.9
1980	22,006	2.7	2,375	10.8	19,631	89.2
1985	24,961	2.6	2,931	11.7	22,030	88.3
1990	28,272	2.5	3,675	13.0	24,597	87.0
2000	34,995	2.2	6,649	19.0	28,346	81.0

Table 18. (Continued)

Country and year	Population					
	Urban			Rural		
	Total	Average increase percentage	Thousands	percentage	Average increase percentage	Thousands
Bangladesh						
1970	73,186	.	5,123	7.0	.	68,063
1975	86,617	3.4	6,929	8.0	6.2	79,688
1980	101,860	3.3	10,186	10.0	8.0	91,674
1985	119,042	3.2	14,285	12.0	7.0	104,757
1990	122,078	2.3	18,631	14.0	5.5	114,447
2000	160,602	1.9	30,514	19.0	5.1	130,088
Bhutan						
1970	836	.	134	16.0	.	702
1975	932	2.2	168	18.0	4.6	764
1980	1,039	2.2	229	22.0	6.4	810
1985	1,158	2.2	290	25.0	4.8	868
1990	1,294	2.2	362	28.0	4.5	932
2000	1,570	1.9	534	34.0	4.0	1,036
Brunei						
1970	118	.	66	56.0	.	52
1975	139	3.0	83	60.0	4.7	56
1980	164	3.0	105	64.0	4.8	59
1985	187	2.7	126	67.4	3.7	61
1990	213	2.6	152	71.5	3.8	61
2000	267	2.3	214	80.0	3.5	53

Table 18. (Continued)

Table 18. (Continued)

Country and year	Population				Rural		
	Total	Urban			Thousands	percentage	Average increase Percentage
		Thousands	Percentage	Average increase percentage			
India							
1970	554,577	110,361	19.9		444,216	80.1	2.4
1975	632,533	132,832	21.0	3.8	499,701	79.0	1.7
1980	717,380	173,606	24.2	5.5	543,774	75.8	1.4
1985	807,566	226,118	28.0	5.4	581,448	72.0	1.0
1990	897,642	287,245	32.0	4.9	610,397	68.0	0.2
2000	1,080,523	464,625	43.0	4.9	615,989	57.0	
Indonesia							
1970	121,198	21,573	17.8		99,625	82.2	2.6
1975	140,334	27,365	19.5	4.9	112,969	80.5	2.0
1980	161,362	36,629	22.7	6.0	124,733	77.3	1.5
1985	183,815	49,262	26.8	6.1	134,553	73.2	1.3
1990	209,595	66,232	31.6	6.1	143,363	68.4	0.9
2000	261,936	104,774	40.0	4.7	157,162	60.0	
Iran							
1970	28,358	11,513	40.6		16,845	59.4	2.3
1975	33,152	14,255	43.0	4.4	18,897	57.0	1.6
1980	38,769	18,299	47.2	5.1	20,470	52.8	1.3
1985	45,050	23,201	51.5	4.9	21,849	48.5	0.8
1990	50,491	27,770	55.0	3.7	22,721	45.0	0.02
2000	61,538	38,769	63.0	3.4	22,769	37.0	

Table. 18. (Continued)

Country and year	Population				Rural		
	Urban						
	Total	Average increase percentage	Thousands	Percentage	Average increase Percentage	Thousands	percentage percentage
Japan							
1970	103,499		74,726	72.2		28,773	27.8
1975	109,948	1.2	83,990	76.4	2.3	25,957	23.6
1980	116,347	1.1	93,094	80.0	1.6	23,253	19.4
1985	121,346	0.8	100,980	83.2	1.6	20,366	15.9
1990	125,110	0.6	107,595	86.0	1.3	17,515	14.0
2000	132,753	0.6	119,478	90.0	1.1	13,275	10.0
Average							
							-1.9
							-2.2
							-2.6
							-3.0
							-2.7
Khmer Republic							
1970	7,102		909	12.8		6,193	87.2
1975	8,289	3.1	1,127	13.6	4.4	7,162	86.4
1980	9,724	3.3	1,488	15.3	5.7	8,236	84.7
1985	11,339	3.1	1,962	17.3	5.8	9,377	82.7
1990	13,004	2.8	2,536	19.5	5.3	10,468	80.5
2000	16,385	2.3	4,096	25.0	4.9	12,289	75.0
Average							
							3.0
							2.8
							2.6
							2.2
							1.6
Korea, Democratic People's Republic of							
1970	13,892		5,557	40.0		8,335	60.0
1975	15,924	2.8	6,943	43.6	4.6	8,981	56.4
1980	18,207	2.7	8,630	47.4	4.4	9,577	52.6
1985	20,721	2.6	10,879	52.5	4.7	9,842	47.5
1990	22,950	2.1	13,082	57.0	3.8	9,868	43.0
2000	27,476	1.8	17,997	65.5	3.2	9,479	34.5
Average							
							1.5
							1.3
							0.6
							0.1
							-0.4

Table 18. (Continued)

Country and year	Population				Rural		
	Urban						
	Total	Average increase percentage	Thousands	Percentage	Average increase percentage	Thousands	percentage
Korea, Republic of							
1970	32,107		12,842	40.0		19,265	60.0
1975	36,212	2.4	15,750	43.5	4.2	20,462	56.5
1980	40,831	2.4	19,215	47.1	4.1	21,616	52.9
1985	45,943	2.4	23,943	52.1	4.5	22,000	47.9
1990	50,310	1.8	28,626	56.9	3.6	21,684	43.1
2000	59,175	1.6	38,760	65.5	3.1	20,415	34.5
Average							
							1.2
							1.1
							0.4
							-0.3
							-0.6
Laos							
1970	2,985		451	15.1		2,534	84.9
1975	3,407	2.7	545	16.0	3.9	2,862	84.0
1980	3,901	2.8	694	17.8	5.0	3,207	82.2
1985	4,449	2.7	845	19.0	4.0	3,604	81.0
1990	4,957	1.1	1,066	21.5	4.8	3,891	78.5
2000	5,988	1.9	1,497	25.0	3.5	4,491	75.0
Average							
							2.5
							2.3
							2.4
							1.6
							1.4
Malaysia							
1970	10,787		4,854	45.0		5,933	55.0
1975	12,441	2.9	6,158	49.5	4.9	6,283	50.5
1980	14,342	2.9	7,888	55.0	5.1	6,454	45.0
1985	16,442	2.8	9,865	60.0	4.6	6,577	40.0
1990	18,319	2.2	11,633	63.5	3.4	6,686	36.5
2000	22,130	1.9	15,048	68.0	2.6	7,082	32.0
Average							
							1.2
							0.5
							0.4
							0.3
							0.6

Table 18. (Continued)

Country and year	Population					
	Urban			Rural		
	Total	Average increase percentage	Thousands	Percentage	Average increase percentage	Average increase percentage
Mongolia						
1970	1,285		663	51.6		48.4
1975	1,499	3.1	805	53.7	4.0	46.3
1980	1,739	3.0	972	55.9	3.8	44.1
1985	1,998	2.8	1,165	58.3	3.7	41.7
1990	2,291	2.8	1,388	60.6	3.6	39.4
2000	2,887	2.3	1,877	65.0	3.1	35.0
Nepal						
1970	11,258		518	4.6		93.6
1975	12,611	2.3	694	5.5	6.0	94.5
1980	14,136	2.3	947	6.7	6.4	93.3
1985	15,788	2.3	1,263	8.0	5.9	92.0
1990	17,591	2.2	1,882	10.7	8.3	89.3
2000	21,251	1.9	3,230	15.2	5.6	84.8
Pakistan						
1970 ^a	63,712		17,202	27.0		73.0
1975	75,775	3.5	21,975	29.0	5.0	71.0
1980	89,547	3.4	28,655	32.0	5.5	68.0
1985	105,165	3.3	36,808	35.0	5.1	65.0
1990	116,985	2.2	44,454	38.0	3.9	62.0
2000	141,181	1.9	63,531	45.0	3.6	55.0
						3.0
						2.5
						2.3
						1.2
						0.7

Table 18. (continued)

Country and year	Population				Rural			
	Urban							
	Total	Average increase percentage	Thousands	percentage	Average increase percentage	Thousands	percentage	Average increase percentage
Philippines								
1970	38,114		12,120	31.8		25,994	68.2	
1975	45,347	3.5	15,463	34.1	5.0	29,884	65.9	2.8
1980	54,095	3.6	20,232	37.4	5.5	33,863	62.6	2.5
1985	64,023	3.4	26,313	41.1	5.4	37,710	58.9	2.2
1990	73,425	2.3	33,041	45.0	4.7	40,384	55.0	1.4
2000	92,513	2.1	49,402	53.4	4.1	43,111	46.6	0.7
Singapore								
1970	2,105		2,105	100.0		—	—	—
1975	2,363	2.3	2,363	100.0	2.3	—	—	—
1980	2,645	2.3	2,645	100.0	2.3	—	—	—
1985	2,959	2.3	2,959	100.0	2.3	—	—	—
1990	3,116	1.0	3,116	100.0	1.1	—	—	—
2000	3,435	1.1	3,435	100.0	1.0	—	—	—
Sri Lanka								
1970	12,603		2,810	22.3		9,793	77.7	
1975	14,206	2.4	3,409	24.0	3.9	10,797	76.0	2.0
1980	15,931	2.3	4,301	27.0	4.8	11,630	73.0	1.5
1985	17,725	2.2	5,495	31.0	5.0	12,230	69.0	1.0
1990	19,187	1.6	6,907	36.0	4.7	12,280	64.0	0.1
2000	22,156	1.5	11,078	50.0	4.8	11,078	50.0	1.0

Table 18. (continued)

Country and year	Population					
	Urban			Rural		
	Total	Average increase percentage	Thousands	percentage	Average increase percentage	Thousands
Thailand						
1970	36,161	.	5,352	14.8	.	30,809
1975	42,550	3.3	6,765	15.9	4.8	35,785
1980	49,775	3.2	8,760	17.6	5.3	41,015
1985	57,732	3.0	11,258	19.5	5.1	46,474
1990	65,086	2.4	14,189	21.8	4.7	50,897
2000	80,016	2.1	21,604	27.0	4.3	58,412
Viet-Nam, Democratic Republic of						
1970	21,154	.	3,850	18.2	.	17,304
1975	23,370	2.0	4,767	20.4	4.4	18,603
1980	25,645	1.9	5,873	22.9	4.3	19,772
1985	28,163	1.9	7,247	25.7	4.3	20,916
1990	31,193	2.1	8,734	28.0	3.8	22,459
2000	37,344	1.8	11,950	32.0	3.2	25,394
Viet-Nam, Republic of						
1970	17,952	.	4,326	24.1	.	13,626
1975	19,883	2.0	5,240	26.4	3.9	14,643
1980	21,763	1.9	6,345	29.2	3.9	15,428
1985	23,900	1.9	7,685	32.2	3.9	16,215
1990	26,471	2.1	9,397	35.5	4.1	17,074
2000	31,691	1.8	13,247	41.8	3.5	18,444

Table 18. (continued)

Country and year	Population					Rural	
	Total	Urban			Thousands	percentage	Average increase percentage
		Average increase percentage	Thousands	Percentage				Average increase percentage
Total Oceania							
1970	18,764	.	12,994	70.2	5,770	29.8	.
1975	20,851	2.1	14,660	70.3	6,191	28.7	1.4
1980	23,200	2.2	16,533	71.3	6,667	27.7	1.5
1985	25,821	2.2	18,601	72.0	7,220	28.0	1.6
1990	28,354	2.0	20,713	73.1	7,641	26.9	1.1
2000	32,776	1.4	24,479	74.7	8,297	25.3	0.8
Australia							
1970	12,514	.	10,556	84.4	1,958	15.6	.
1975	13,862	2.1	11,909	85.9	1,953	14.1	-0.06
1980	15,365	2.1	13,420	87.3	1,949	12.7	-0.08
1985	16,985	2.0	15,057	88.6	1,928	11.4	-0.17
1990	18,537	1.8	16,683	90.0	1,854	10.0	-0.8
2000	21,180	1.3	19,507	92.1	1,673	7.9	-1.0
British Solomon Islands							
1970	163	.	5	3.0	158	97.0	.
1975	185	2.56	7	4.0	178	96.0	2.4
1980	211	2.66	11	5.0	200	95.0	2.4
1985	239	2.5	16	6.6	223	93.4	2.2
1990	267	2.2	22	8.4	245	91.6	1.9
2000	323	1.9	39	12.0	284	88.0	1.5

Table 18. (continued)

Country and year	Population				Rural		
	Urban						
	Total	Average increase percentage	Thousands	Percentage	Average increase percentage	Thousands	percentage
Cook Islands							
1970	24	.	1	5.0	.	23	95.0
1975	28	3.1	2	6.0	14.9	26	94.0
1980	34	4.0	2	7.0	0.0	32	93.0
1985	40	3.4	3	8.0	8.5	37	92.0
1990	45	2.4	5	10.0	14.9	40	90.0
2000	54	1.8	8	15.0	2.9	46	85.0
Fiji							
1970	540	.	106	19.7	.	434	80.3
1975	624	2.9	127	20.3	2.7	497	79.7
1980	715	2.8	152	21.2	3.7	563	78.8
1985	823	2.8	186	22.6	3.0	637	77.4
1990	920	2.3	225	24.5	3.9	695	75.5
2000	1,080	1.6	314	29.1	3.3	766	70.9
Nauru							
1970	7	.	1	15.0	.	6	85.0
1975	9	5.2	1	15.8	0.0	8	84.2
1980	12	5.9	2	17.0	14.9	10	83.0
1985	16	5.9	3	18.3	8.5	13	81.7
1990	19	3.5	4	20.0	5.9	15	80.0
2000	25	2.8	5	21.0	2.3	20	79.0

Table 18. (continued)

Country and year	Population				Rural		
	Urban						
	Total	Average increase percentage	Thousands	Percentage	Average increase percentage	Thousands	Average increase percentage
New Zealand							
1970	2,860		2,259	79.0		601	21.0
1975	3,120	1.8	2,526	81.0	2.3	594	19.0
1980	3,420	1.9	2,832	82.8	2.3	588	17.2
1985	3,760	1.9	3,177	84.5	2.3	583	15.5
1990	4,106	1.8	3,535	86.1	2.2	571	13.9
2000	4,665	1.3	4,133	88.6	1.6	532	11.4
Papua New Guinea							
1970	2,421		29	1.2		2,392	98.8
1975	2,750	2.6	44	1.6	8.7	2,706	98.4
1980	3,126	2.6	59	1.9	6.0	3,067	98.1
1985	3,590	2.8	90	2.5	8.8	3,500	97.5
1990	4,044	2.4	154	3.8	11.3	3,890	96.2
2000	4,939	2.0	351	7.1	8.6	4,588	92.9
Tonga							
1970	87		3	3.0		84	97.0
1975	103	3.43	4	4.0	5.9	99	96.0
1980	123	3.6	6	5.0	8.5	117	95.0
1985	146	3.5	10	6.6	10.8	136	93.4
1990	164	2.4	14	8.4	7.0	150	91.6
2000	200	2.0	24	12.0	5.6	176	88.0

Table 18. (continued)

Country and year	Population				Rural		
	Urban						
	Total	Average increase percentage	Thousands	percentage	Average increase percentage	Thousands	percentage
Western Samoa							
1070	148		34	23.0		114	77.0
1975	170	2.8	40	23.5	3.3	130	76.5
1980	194	2.7	49	25.3	3.7	145	74.7
1985	222	2.7	59	26.5	3.8	163	73.5
1990	252	2.6	71	28.2	3.8	181	71.8
2000	310	2.1	98	31.6	3.3	212	68.4
							2.6
							2.4
							2.4
							2.1
							1.6

Source: Total population projections, table 13, A series; for 1970 estimates of urban and rural population, reference was made to *Growth of the World's Urban and Rural Population, 1920-2000*, Kingsley Davis, *Basic data for Cities, Countries, and Regions, op. cit.* Urban and rural population estimates after 1970 are highly conjectural.

a/ Excluding East Pakistan.

DEMOGRAPHIC DATA: REVIEW AND EVALUATION

by
the ECAFE secretariat

Although large quantities of population data are being collected in countries of the ECAFE region, the quality and quantity of available data, in terms of needs, is still a matter of great concern to demographers and development planners. The development of data has not kept pace with developments in demographic techniques of analysis and advancement in computer science. Inadequacies in data make the application of demographic techniques ineffective in estimating reliable demographic indices urgently needed to provide bases for various programmes, to measure changes in population and to review and evaluate the progress of development programmes and family planning activities. It is due to inadequacies and deficiencies in the input data that wide variation is observed in estimates of vital rates obtained through the application of different techniques for the same population. Some irregularities in the data are random, others are systematic.

It is this mix of errors which makes correction of data by the application of smoothing and graduation formulae questionable. In this paper, an attempt is made to provide a brief description of sources of data, the availability of data in terms of needs, and the quality of the available data. In the concluding section of the paper some suggestions are made as a basis for discussion on developing sources and quality of data.

Sources of data

The major methods of obtaining population data are periodic censuses and vital registration records. Few countries in the world maintain population registration and family planning records have become supplementary sources of population data. Table 1 presents a brief picture of the situation since 1900 and the current state of census-taking in countries of the ESCAP region. It also shows the status of coverage of vital registration systems.

Of the 31 countries shown in the table, four countries, namely, Afghanistan, Bhutan, Laos and the Republic of Viet-Nam, have never had a population census. The last complete census in Burma was taken in 1941, a partial census was taken in 1953-1954 and a complete census is being planned for 1973. China has a long tradition of obtaining population statistics, and in order to meet the current needs at least six attempts have been made since the beginning of the century to take a census but each time only partial coverage was achieved. The first complete recent census was taken in 1953.^{1/} The Khmer Republic has taken only one census, in 1962, and Laos is planning to take the first partial census in 1973. Most other countries have a series of population census data. Out of 27 countries

^{1/} *World Population Prospects as Assessed in 1963* (United Nations publication, Sales No. 66.XIII.2), p. 51.

which have had censuses, eight (Australia, Cook Islands, Hong Kong, Japan, Nauru, New Zealand, Papua New Guinea and Western Samoa), are taking censuses every five year, fourteen others every ten years and the remaining five have yet to establish their periodicity.

According to the information available at the time of writing, in the 1970/71 round, censuses have been taken in 21 countries, including Mongolia and Pakistan which took their censuses in 1969 and 1972 respectively. A list of these countries, with the enumerated and projected populations, is shown in table 2. Results of post-enumeration surveys showing the degree of completeness of enumeration are not yet accessible and the population figures given in the table are provisional. It is noted that in all countries for which figures were available projected population exceeds the estimate based on intercensal growth rate by from 0.2 per cent in Australia to 8.1 per cent in Hong Kong. In all cases except Hong Kong the discrepancy is of the order of 5 per cent or less.

As shown in table 1, vital registration systems exist in all countries except Bhutan, China ^{2/} and Laos. But only ten countries (Australia, Brunei, Cook Islands, Fiji, Hong Kong, Japan, Nauru, New Zealand, Singapore and Sri Lanka) have complete or nearly complete coverage of birth and death statistics. In Malaysia, only the western part has nearly complete data. Altogether, countries which have almost complete registration of vital events comprise only 7 per cent of the total population of the region. In all the remaining countries geographical and population coverage is incomplete in varying degrees. The extent of under-registration of events is estimated at 30 per cent or more. ^{3/}

In the ESCAP region, only Japan has a national population register through which accurate vital statistics and fairly reliable internal migration information are obtained. China has a tradition of maintaining continuous local registers called **Pao-chia** from ancient times. ^{4/} Maintenance of population registers in the developing countries might be difficult, especially because of the low level of literacy, and financially expensive.

Sample surveys to obtain estimates of population parameters have been conducted in several countries of the region, including Brunei, India, Malaysia, Pakistan and Thailand. These surveys are either not a regular source or they suffer from various shortcomings. Some population data are collected through national sample surveys and multipurpose surveys. As such surveys are comprehensive and their main focus is not demographic, they tend to produce data of questionable reliability.

Sample registration was carried out in conjunction with a quarterly sample survey, but on an experimental basis, in Pakistan in 1962-1965. ^{5/} Since 1968

^{2/} At the time this paper was written no information on the status of the vital registration system in China was available.

^{3/} *Report of the Seminar on Civil Registration and Vital Statistics for Asia and Far East* (United Nations publication, Sales No.E.70XV.15).

^{4/} *World Population Prospects as Assessed in 1963*, op.cit.

^{5/} Pakistan Institute of Development Economics, *Report of the Population Growth Experiment*, 1968.

sample registration has been introduced in India, and half-yearly and annual estimates of vital rates have been published up to June 1971. 6/

Data availability and needs

It is being realized increasingly that there is a complex interaction between population and economic and social development factors. New approaches to economic and social problems, such as family planning programmes and activities, regional and unified planning, and threats of ecological imbalance, are placing additional demands on data. The demand for an interdisciplinary approach to deal with the complex of population-related problems is increasing. For policy and programme formulation and evaluation, appropriate continuous series of population data in sufficient quantity and detail should be available.

As development levels and processes vary from country to country, the demand for quantity and detail of population data will also vary and no standard checklist of data can be proposed. Ideally, however, population information on fertility, mortality, migration, size, growth, sex and age composition, distribution, marital status, age of marriage, marriage type, educational attainment, housing, food and nutrition, health, transport and communication, and occupation and income should be available on a regular basis to the smallest administrative unit for unified regional planning and programme implementation. Such large quantities of data should be available to permit various types of cross-classification necessary for analysing and understanding developmental problems and processes.

An operational plan should clearly define its objectives, targets and coverage in terms of population size, growth, composition, distribution and various other characteristics. The smallest geographical unit for the implementation of programme activities must also be defined, and the characteristics of its population stated in quantitative terms, in order to determine the base for development and setting realistic targets. The precise need for data will depend on the state of development of each country and not all countries of the region should obtain all these data at once. However, attempts should be made towards achieving this goal with the increase in the comprehensiveness of the development plan. Each country should review its available data and make an assessment of data which are needed but are not being collected. But even the minimum amount of reliable data needed to compute simple demographic indices on a continuous basis places a heavy demand on the data-producing agencies.

It has been observed that censuses in most countries of the region are taken at intervals of ten years. Although eight countries are taking censuses every five years, their total population comprises six per cent of the region's total. No doubt censuses are the major source of demographic information and are useful, but, in view of rapid demographic changes and their interaction with economic and social development, data are needed on a more current basis. Besides, it is not feasible to collect all needed demographic data through a large-scale inquiry such as a census.

6/ Office of the Registrar General, India, *Sample Registration Bulletin*, vol. VI, No. 1, January-March 1972.

Quality of data

Table 1 and the foregoing discussion indicate the extent of completeness of vital registration data in countries of the region. It may be assumed that countries which have incomplete vital registration data also have low-quality census or survey data. As is shown in table 2, for most developing countries of the ECAFE region the extent of discrepancy between the projected population and the estimate based on intercensal growth for 1970 is 5 per cent or less. This, however, does not prove either that the 1970/71 round of censuses has produced high-quality data or that the projections are very accurate. In absolute terms, the discrepancies are quite large, especially for large countries, such as India, where the discrepancy is of the order of 16 million, and Indonesia where it is about 5 million.

The major problems associated with the low quality of census, vital registration or survey data are a low level of literacy, enumerators' bias, response errors, incomplete area and population coverage, inadequate definition of concepts, and difference between definition and its application in the field. Such non-sampling factors appear to be the major source of errors in population data in the developing countries, and sampling errors constitute only a small fraction of the total error. Most of these problems are well-known to demographers and analysts of population data but measures to remedy them have yet to be undertaken.

Developing sources and quality of data

In this section some suggestions are made, as a basis for discussion, for development of the sources and quality of population data.

The first need is to review in depth and evaluate each system of data collection. Such an analysis of a system should enable errors arising from procedures to be separated from response errors and enumerators' bias. Secondly, appraisal of the data yielded by each system should be undertaken with a view to explaining deficiencies and irregularities of data in terms of associated factors. Thirdly, experimentation should be undertaken to improve the national censuses, vital registration systems, family planning records and other sources of population data. Fourthly, until the national systems are developed, population data urgently needed should be obtained by the use of sampling techniques.

In order to minimize cost and maximize benefit, it is desirable that experimentation should be combined with collection of data through the use of sampling techniques. These have the advantage of exploring ways and means of improving the procedures of census-taking and the official registration system, and at the same time obtaining fairly reliable and prompt information at relatively low cost. The use of a dual system, i.e., registration of vital events in conjunction with household enumeration in a representative sample of areas can, if properly designed, produce meaningful data of sufficient reliability to fulfil various needs of development and family planning programmes. The use of sample household surveys or sample registration alone will not give as reliable data as the application of the dual system. One of the major problems in the household surveys is the use of a reference period such as "last 12 months" or

“last 6 months” for obtaining vital events, and the data obtained are affected by memory faults. The use of sample registration alone can provide reliable data on vital events but does not give reliable information on the denominator — the population exposed to risk of such events. The simultaneous use of sample registration and sample household survey has the advantage of checking the accuracy and coverage of both, and can provide adequate data for computing vital rates. When the quality of data reaches an acceptable standard and the resources of each country permit, the initial sample of areas in the dual system should be expanded gradually to include more and more areas, leading eventually to complete national coverage.

The ECAFE secretariat is planning to undertake a programme of assisting countries in the region to develop their major sources of population data and at the same time to obtain the reliable data needed for estimating vital rates and other economic and social indices of population on the basis of a representative sample of areas. Assistance with the analysis of data will also be available under this programme in order to provide a better understanding of the interaction of demographic and social economic variables which must be considered in sound development planning.

Table I. Population censuses and vital registration statistics in countries of the ECAFE region

Country	Census year (since 1900)			Vital registration statistics <u>b/</u>
	First census <u>a/</u>	Last census	next census	
Afghanistan	—	—	—	I
Australia	1901	1971	1976	C
Bhutan	—	—	—	—
British Solomon Islands	1931	1970	1980	I
Brunei	1911	1971	—	C
Burma	1901	1941	1973	I
China	1953 <u>c/</u>	1953	—	—
Cook Islands	1902	1971	1976	C
Fiji	1901	1966	1976	C
Hong Kong	1901	1971	1976	C
India	1901	1971	1981	I
Indonesia	1930	1971	1981	I
Iran	1956	1966	1976	I
Japan	1920	1970	1975	C
Khmer Republic of	1962	1962	—	I
Korea, Republic of	1920	1970	1980	I
Laos	—	—	1973 <u>d/</u>	—
Malaysia	1901	1970	1980	I
Mongolia	1918	1969	1979	I
Nauru	1921	1971	1976	C
Nepal	1911	1971	1981	I
New Zealand	1901	1971	1976	C
Pakistan	1901	1972	1981	I
Papua New Guinea	1911/1954	1971	1976	I
Philippines	1903	1970	1980	I
Singapore	1901	1970	1980	C
Sri Lanka	1901	1971	1981	C
Thailand	1911	1970	1980	I
Tonga	1901	1966	1976	I
Viet-Nam, Republic of	—	—	—	I
Western Samoa	1900	1971	1976	I

a/ Source: *Demographic Yearbook, 1970* (United Nations publication, Sales No. E/F.71.XIII.1), table 7.

b/ C — Complete or nearly complete; I — Incomplete (Source: *Report of the Seminar on Civil Registration and Vital Statistics for Asia and Far East—Vopenhagen, Denmark, 1968* (United Nations publication, Sales No. E.70.XV.15).

c/ Attempts at taking census were made in 1909-1911, 1912, 1928-1929, 1942 and 1947 but complete coverage could not be established (*World Population Prospects as Assessed in 1963, op. cit.*)

d/ Preparations for taking a partial census are being made.

Table 2: Population enumerated in countries of the ECAFE region since 1969 and estimated for 1970

Country and census year	Enumerated population	Estimated population thousands, mid-1970		
		Estimate based on intercensal growth	United Nations projection, medium variant <u>a/</u>	Percentage projection exceeds estimate
Australia, 1971	12,728,461 <u>b/</u>	12,484	12,514	0.2
British Solomon Islands, 1970	160,998	161	...	...
Brunei, 1971	136,256	132	...	...
Cook Islands, 1971	21,217	21	...	...
Hong Kong, 1971	3,936,630	3,857	4,168	8.1
India, 1971	547,949,809	538,710	554,577	3.0
Indonesia, 1971	118,459,845	116,542	121,198	4.0
Japan, 1970	103,720,060	103,409	103,499	0.1
Korea, Republic of, 1970	31,460,994 <u>b/</u>	31,319	32,107	2.5
Malaysia, 1970	10,421,865 <u>b/</u>	10,389	10,787	3.8
Mongolia, 1969	1,197,600	1,231	1,285	4.4
Nauru, 1971	...	...	...	...
Nepal, 1971	11,289,968	11,086	11,258	1.6
New Zealand, 1971	2,862,631	2,835	2,860	0.9
Pakistan, 1972	...	...	...	...
Papua New Guinea, 1971	...	...	...	...
Philippines, 1970	36,944,847	37,138	38,114	2.6
Singapore, 1970	2,074,507	2,075	2,105	1.4
Sri Lanka, 1971	12,747,755	12,382	12,603	1.8
Thailand, 1970	34,152,000 <u>b/</u>	34,425	36,161	5.0
Western Samoa, 1971	146,461	143	...	...

a/ Source: United Nations, Department of Economic and Social Affairs, Population Division, "Urban and Rural Population: Individual Countries, 1950-1985, and Regions and Major Areas, 1950-2000", ESA/P/WP. 33/Rev.1, September 1970.

b/ Could not be confirmed at the time this paper was prepared.

... Figures were not available at the time this paper was prepared.

DEMOGRAPHIC TRANSITIONS IN ASIAN REGIONS*

by

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Counts and estimates of the numbers of the people are ancient, while evaluated censuses, controlled vital records, and sophisticated analytical techniques are recent. The historical demography of Asian lands and peoples is known only unsurely and in broad outlines. In 1920, though, Asia's 1,000 million people were 55 per cent of the earth's total population of 1,900 million. 1/ Half a century later, in 1970, Asia's 2,100 million people were 57 per cent of the earth's total population of 3,600 million. The Asian population in 1970 was larger than the total population of the earth in 1920. In relative terms, population had doubled. In numerical terms, there had been an addition of 1,000 million people.

The perspective of time may seem irrelevant, given the urgency of present problems of population and the magnitude of current growth. But if future population changes are simple replications of those of the present or the recent past, the developmental problems of Asian countries will approach the insoluble. This fact is evident in a comparison of the estimated growth of the last three decades with the projected growth of the next three decades on assumptions of declining mortality and unchanging fertility. 2/

Area	Number (in millions)			Percentage increase	
	1940	1970	2000	1940-1970	1970-2000
World	2,295	3,632	7,522	58.2	107.1
Asia	1,244	2,056	4,513	65.2	119.5
East	634	930	1,811	46.6	94.7
South	610	1,126	2,702	84.6	140.0

In the 1940s, as in the preceding decades, Asia's population increased by about one-tenth. The modern decline in mortality began in the late 1940s and continued at variable, but often accelerating, rates through the 1960s. Expectation of life at birth, 50 years or more today, may be close on 70 years by the end of the century. Fertility was high in the 1940s and remains high today. Decade growth increased from 11 per cent in the 1940s to 24 per cent in the 1960s. Without transition in fertility, it will increase further to 26 per cent in the 1970s, 30 per cent in the 1980s, and 34 per cent in the 1990s.

* The opinions expressed in this paper are the author's own and do not necessarily reflect the views of her organization or those of the ESCAP secretariat or of the United Nations.

1/ For 1920-1960, *World Population Prospects as Assessed in 1963*, Population Studies No. 41, (United Nations publication, Sales No. 66. XIII.2) annex III, table A3.1. *World Population Prospects, 1965-1985, as Assessed in 1968*. Working Paper No. 30 (United Nations Secretariat) Total population estimates, medium variant, table I.

2/ *World Population Prospects as Assessed in 1963*, *op. cit.*, table A3.5, p. 137. The regional classification of Asian countries used here of this paper and listed at the end is that used in the publication.

The enormity of the problems of growth is apparent in the numerical additions to the Asian population in the successive decades. The additions were 137 million in the 1940s and 396 million in the 1960s. If mortality declines but fertility does not, additions will be 533 million in the 1970s and 1,100 million in the 1990s. Cumulative additions were 811 million between 1940 and 1970; they will be 2,500 million between 1970 and 2000. If the demographic path of the recent past persists, the addition to Asia's population in the remaining decades of this century will be larger than the population of the earth in 1940.

Analyses of Asian and European population structures, dynamics and associations suggest an historical resolution to problems of growth in Europe that were once somewhat comparable to those now prevalent in Asia. In Europe, economic and social development and demographic modernization were associated processes. The demographic transition proceeded slowly over time. Initially, growth rates reflected the differences between birth and death rates that were both high. As death rates declined, rates of growth increased. Eventually, more rapidly declining birth rates yielded slowing rates of growth. Finally both birth and death rates were low and growth was slight.

Will there also be demographic transitions in Asian populations? The answer is in the affirmative, for there is now completed transition in Japan, on-going transitions in the other east Asian populations outside the mainland, and probable transition on the mainland. There are areas of transition in south Asia. Will Asian transitions be replicas of those that occurred earlier in Europe? The answer, based on the experience of the East Asian populations now in transition, is in the negative. Will the transitions in fertility come soon enough and proceed with sufficient speed to avert the awesome consequences of the growth potential of the crowded lands of Asia? The answer to this question does not lie in analogy or hypothesis but in future developments within the countries.

Transitions in East Asia

Japan was the first of the Asian countries to achieve advanced economic and social development. It was also the first to achieve low levels of fertility and mortality and the net reproduction rate of approximately 1.0 that indicate a cessation of growth when the age composition becomes stable. The process of transition occupied a century. The reduction of mortality was slow and arduous; modern public health, bio-medical technologies, and nutritional knowledge were limited in the late nineteenth and early twentieth centuries. Birth rates declined slowly as age at marriage advanced and limitation practices among the married became more widespread and more effective. There were no government policies or programmes to encourage birth control practices; modern means of birth control were not yet invented. Levels and declines in fertility were related to industrialization, urbanization and advancing education.

The demographic transition in Japan was relatively advanced by the late 1930s. Completion came rapidly in the early 1950s when new technologies permitted the swift reduction of death rates and legalized induced abortion provided a means of birth limitation acceptable to a people whose aspirations and motivations were now focused on a two-child family.

Precise replication of the economic and social development and the demographic transition in Japan is not likely. Japan's experience indicates, however, that development and transition are not limited by culture, religion, social structure, political form or period of history.

The current prevalence of transitions in other areas of east Asia suggests that Japan's demographic transition was an integral component in modernization rather than a fortuitous correlative. There were harbingers of transition in several areas of the western Pacific in the 1920s and the 1930s. Death rates were declining and age at marriage was increasing. There were no measurable declines in fertility but there were differentials in fertility that were associated with urbanization, employment outside primary industry, and education. In later decades, and particularly in the 1960s, there was rapid economic growth, swift urbanization, advancing education, and increasing employment of women outside the home. Mortality declined to low levels. Health services included family planning, whether directly governmental or subsidized by the Government. Age at marriage moved upward and marital fertility declined.

The initial fertility in the areas of the Western Pacific was at the high levels of traditional economies, and it was presumed to be highly resistant to change. There were neither predictions nor projections of swift transition, yet the extent and the speed of the transitions are distinctive to the period and the region. Family planning programmes and economic and social transformations are re-inforcing factors in change. Problems of population growth are emerging as transitory rather than enduring.

The demographic transitions in Japan and the other areas of the western Pacific are documented in censuses, vital records and surveys. Processes of stability and change can be traced historically, with increasing specificity and precision over time. The questions of change and transition in China are most significant, practically and theoretically. The Chinese remain the largest of earth's cohesive ethnic groups; the country has a unified area comparable in extent and diversity to a continent rather than a country. The culture is numerical; figures derived from counts, registration systems and investigations of registers are abundant for ancient and traditional China. Modern demographic statistics collected, compiled and evaluated on a national basis and published in detail were not available prior to 1949; they are not available outside China today. Hence comments on the greatest of the demographic transitions now in process rely on descriptive materials, occasional data and conjecture. In the 1930s and the 1950s, a range of 100 million separated the presumably informed estimates of the size of the total population; a range of more than 100 million separates the external statements of the 1970s. The population reported from the investigation and registrations of 1953 was somewhat below 600 million; the statement of the population as of 1972 given to the United Nations Economic and Social Council was more than 700 million. The latest official figures on birth and death-rates pertain to 1957.

The altered family roles, the liberation of women, the extension of education, the equalization of opportunities, the laborious struggles for development, and orientation to the future are all conducive to delayed marriage and smaller families. The development of health services, the drives for sanitation, the

The demographic base, the structures of aspirations, and the health services of the present period in China are all conducive to rapid declines in fertility and, hence, quickening demographic transition. All people now aged 23 years or under were born in China; no people below age 35 years have other than childhood memories of the years prior to 1949. The ideals, the motivations and the expectations most relevant to the timing, the spacing, and the limitations of births are those of people whose lifetime conditioning is that of the new order. crusades against particular vectors or diseases, and the improved and systematized production and distribution of food eliminated or reduced many episodic hazards to life and lowered general mortality. Birth control responsibilities in the health services and recurrent educational campaigns were both direct and indirect forces in the reduction of fertility. The emphasis on delayed marriage, postponed and spaced childbearing, and few children, as aspects of life patterns conducive to personal welfare and national service, was oriented mainly to political and social goals rather than economic and demographic arguments.

Reductions in infant mortality and high rates of child survival make irrelevant many of the ancient arguments for frequent childbearing. Community provisions for disability and old age lessen the force of another common argument for many children. Provisions for pre-school children and schools, along with the participation of women outside the home or the family activities, diffuse personal relations and contribute both to lessened reliance on children and a more rational approach to childbearing. The organization for the delivery of health services, which reaches to the street committee, the factory unit and the production brigade, provides a channel for education, advice and supply in birth control fields. Scientific and technical advances, mass production, and distribution paths make pills, intra-uterine devices, induced abortion and sterilization as easily available in communes as in cities.

The historical path to demographic transition in the 1950s and 1960s and swift transition in the early 1970s seem established as facts of the present and portents of a current and future resolution of the problems of population growth in China. Illustrative estimates and projections are used later in this report. However, reconstructions of the past, measurements of the present, and projections of the future that have any substantial validity beyond the conjectural await the availability of data, if indeed they can be undertaken except by or in co-operation with the responsible institutions in the Government of China.

Transitions in South Asia

The developments that should signify transition came earliest in south Asia. The major decline in mortality in Ceylon between 1947 and 1948 was acclaimed and debated as the harbinger of a new pattern of rapid population growth. India was the forerunner in national policy to reduce rates of population growth through controlled fertility. The policies and programmes in family planning fields are described elsewhere in the documentation for this Conference.

There are countries of transition in south Asia, and there are areas of transition within countries. The decline in fertility in Singapore was as precipitate as that in Hong Kong, and fertility is declining in West Malaysia. There is limited

information on the dynamics of fertility in the Indo-Chinese peninsula. Rates of growth are high in the Philippines and Indonesia, but there are now family planning programmes in the Governments. There is no basis at present for definitive assessments of the impacts of the family planning programmes in Bangladesh and Pakistan.

The major questions of demographic transition in south Asia pertain to India. Questions concerning the economic and social transformations, the family planning programmes and activities, and their separate or associated impacts on the age at marriage or remarriage and the childbearing of the married cannot be resolved in analyses for all India. The country is continental in area and massive in population. People are diverse in culture, language, religion and ethnic origin. Basic economies, and achieved and current developments are also variable. Intensive analyses of the hundred-year census record for regions, states, and districts would yield the historical demography, the recent dynamics and the current developmental status for the areas. The associations between economic development, educational advance, social structures and migrant patterns, and continuing and changing family planning practices would be meaningful measures of past and present transitions and provide bases for future planning and projections. In the absence of this analysis or substantial sectors of it speculation would be premature.

Future transitions

The prediction of the Asian future as of 1970 from the population structures and dynamics as of 1940 was patently impossible. These were not years of continuity in development, whether economic, social or demographic. The prediction of the Asian future as of 2000 from the population structures and dynamics as of 1970 is also impossible. Illustrations of future changes and the specifications of necessary paths to specific future goals of size or growth are quite possible. The range of future populations viewed as plausible is subject to numerical formulation and projection. It is projections of these types that are tools for planning.

The future developments of population are not as fluid as the foregoing remarks might seem to indicate. In normal periods, changes proceed through numbers of deaths and births that are both small in relation to the great central mass of the population. Changes in fertility affect only the entering cohort of births. Immediate and drastic changes in populations can come only through migration or mortality. Migration cannot be a major factor in the future of the great Asian populations. No country would plan for a removal of its population growth by death. The curtailment of growth or the reduction of numbers through natural cataclysm, disease, famine or war would involve economic and social retrogression and thus an intensification, rather than a resolution, of the population problems of development.

The current projections of future populations by the United Nations are based on assessments as of 1968 and a terminal date as of 1985. If the focus is change between 1970 and 1985, the major uncertainties concern those below age 15 years in the latter year. Infants and children in pre-school and early school ages in 1985 will be the survivors of the births that occur between 1970 and 1985. All

those who will be age 15 years and over in 1985 are now born; the major element of uncertainty as to future numbers is the level of mortality. It is the members of these adult age groups whose decisions and actions will determine the levels of the fertility and the state and type of development between 1970 and 1985 and thus influence the dynamics of the years beyond 1985.

The general assumption in the United Nations projections is continuing transition, with the onset of the decline in fertility related to the state of development and the presence and type of population policy. The estimated populations as of 1970 and those projected for 1985 are given below.^{3/}

Subregion	Population (million)		Change, 1970-1985	
	1970	1985	Amount	Percentage
Japan	103	121	18	17.2
Mainland east	765	973	208	27.2
Other east	61	87	26	43.1
Middle south	762	1,137	375	49.2
Southeast	287	434	147	51.4
Southwest	77	121	44	57.4

Few comments are required, since the picture of growth is similar to that summarized previously for the years 1940-1970 and 1970-2000. The projected increase of 27.1 per cent in east Asia is that of a region substantially advanced in transition; the projected increase of 50.3 per cent in south Asia is that of a region in early transition. Some probings of the prospective dynamics for mainland east Asia, middle south Asia, and southeast Asia, and their relevance to development, are presented in table 1.

These medium projections for the great Asian regions are products of the initial age structures and the assumed levels of fertility and mortality. Since age structures were products of past population dynamics and the trends in declining mortality and fertility are assumed to proceed at a fairly uniform pace once declines begin, the critical differences in relative dynamics are mainly the product of assumed initial levels of fertility and the date when decline began. In mainland east Asia, the pre-modern birth rate was taken as 38 per 1,000 population and the initiation of decline in fertility as 1955. In the south Asian regions, pre-modern birth rates were taken as 44 and the assumed onset of decline was delayed. The estimated and the assumed vital rates per 1,000 population in Asia follow.

Period	Birth rates			Death rates		
	Mainland east	Middle south	Southeast	Mainland east	Middle south	Southeast
1965-1970	33.1	44.4	44.2	15.3	17.2	16.1
1970-1975	30.2	42.9	42.6	13.4	15.1	14.0
1975-1980	27.8	39.8	39.9	11.9	13.0	12.1
1980-1985	25.9	26.6	36.9	10.6	11.1	10.3

^{3/} *World Population Prospects, op. cit.*, table 2.

Generalizations concerning the relations of Asia's increasing population to economic and social change and political stability were once stated with certainty. It is one of the surest of the indicators of development in this vast area so recently pre-modern in economic organization, use of resources and population dynamics that any present generalization is hazardous and no future generalization is valid for the continent as a whole. Over-all, however, the countries of advanced or completed demographic transition include small portions of the people of all Asia or any of its major regions. Asia remains the site of the earth's greatest concentrations of people and of its largest population problems.

The most urgent problem of the 1970s and the 1980s is employment; the subject permeates the documentation and the discussions of this Conference. In south Asia, men aged 15-64 years will be half again as numerous in 1985 as they were in 1970. This is a relatively firm figure, since all men who will be of adult age in 1985 are now born. The difficulties of providing work for the increasing millions of men in today's milieu of rural pressure, urban marginality and pervasive poverty are formidable. The resolution to the problems of labour and employment is essential, not only to economic development and political stability, but to the course of demographic transition itself. The employment of men at minimum levels of income influences the formation and the functioning of families whose present living and future aspirations are conducive to planned and limited parenthood.

Increases in the numbers of women aged 15-44 years are similar to those in the numbers of men in the productive ages—almost one third in east Asia, more than one half in south Asia. If these increasing numbers of women marry at the same ages as their mothers and have children at the same rates, numbers of births will increase along with the numbers of women. In south Asia, a 50 per cent reduction in age-specific fertility would be essential to hold the numbers of births relatively constant. Whether or not such a decline can or will occur is questionable. Family planning programmes are receiving increasing priorities in the countries. Advancing ages at marriage and declining fertility among the married are associated with education, labour force participation and aspiration for family and children, even in the absence of government programmes to induce motivations and deliver services for family planning. But these various social and psychological changes that are conducive to natural transitions apart from family planning programmes are conducive to the adoption, the extension and the achievements of programmes.

There are integral relations between economic and social development and demographic modernization. Rising populations slow, if they do not preclude, economic and social developments. But economic and social developments are essential to creating the milieu and the motivations that lead to planned and smaller families. Movements to the solution of the life problems of adults in the present generation seem to be essential to solving the problems of population growth in the next generation.

The United Nations projections that provide the basis for the assessment of population growth in the years from 1970 to 1985 are based on assumptions

about operating family planning programmes and hypotheses as to declining fertility. The projected declines in fertility are sufficient to lessen but not to resolve the problems of increasing numbers in the adult ages in the years from 1985 to 2000. In middle south and southeast Asia, persons under age 15 years in 1985 will be 45 per cent more numerous than those under age 15 years in 1970. Since the youth of 1985 are the entrants to adult ages between 1985 and 2000, the increase in their numbers suggests the order of magnitude of the increases in manpower in the final fifteen years of this century.

Hypothetical paths

The analysis of population prospects for the years between 1970 and 1985 has substantial reality. The problems of increasing manpower, growing numbers of families, and labour utilization in rural areas, in towns and in cities are inescapable. The dynamics that define the numbers in later years are, however, those of the period now in process. Some idea of the dimensions of future populations, under assumptions as to the future speed of the declines in fertility, may contribute to the evaluation of the demographic processes of the present and the specification of the demographic changes that are essential if economic and social development is to be a continuing and accelerating process. The projections are those of Tomas Frejka.^{4/} The assumptions are a continuing decline in mortality and linear declines in fertility to a level that yields a net reproduction rate of 1.0 at a specified future date. The populations are projected from 1970 to 2150 so that the numbers, the vital rates and the age structures may be traced from the present to the future time when the maximum population inherent in the stable structure will be reached. The paths to population stabilization are conjectural but the nature of the processes of change and the immensity of the growth inherent in declining mortality coupled with delayed and slowly declining fertility are obvious and incontrovertible. The major imperatives for present population and development policies if future problems of population and development are to be resolved are very clear.

If the United Nations medium estimates of the population of mainland east Asia are accepted, the population as of 1970 was somewhat above 750 million (table 2). The birth rate of the preceding five years had been 35.5, the death rate 14.6. Annual growth was 2 per cent.^{5/} The major population in this region is that of China. Here there are pervasive economic developments, wide distributions of income and opportunity, and diffused and intensive social transformations. There is delayed marriage, a two-child ideal, and an educational and delivery system for health services that includes birth control. All modern means of limitation are available—intra-uterine devices, pills, sterilization and induced abortion. If these manifold changes and effective services extend throughout the communes of China, it is plausible to assume a decline of the net reproduction rate to 1.0 by 1980-1985. The birth rate would then be below 20, the death rate 10. The average annual growth would be below 1 per cent. Even in these circumstances of rapidly declining fertility, the mainland east Asian population would increase to 950 million in 1985. The size of the population when the age structure

^{4/} Frejka *Alternatives of World Population Growth*, monograph, the Population Council (in press).

^{5/} Birth and death-rates and other measures of population dynamics pertain to the female population; total populations are estimated through assumed ratios of numbers of males to numbers of females.

became stabilized at the end of the twenty-first century would be 1,400 million.

Thus, given a precipitate decline in the net reproduction rate to 1.0 in fifteen years, the population of mainland east Asia would continue to grow for more than a century and the amount of the increase would be over 500 million people. These are formidable figures. There is an alternative statement that seems more plausible in the international context. Given the assumed declines in fertility and mortality, transition in mainland east Asia would be completed in about a century and a quarter, and the increase would amount to three-fourths of the initial numbers.

It can also be argued with some plausibility that the transition to a net reproduction rate of 1.0 in mainland east Asia will not be completed before the end of the century. If this occurs, the population will continue to increase for a century and a half and the maximum population will be 1,800 million.

The shortest period of growth and the lowest maximum population in mainland east Asia would occur if population growth dropped immediately to that implicit in a net reproduction rate of 1.0. Longer periods of growth and larger ultimate populations ensue as the date of achievement of a net reproduction rate of 1.0 is moved further and further into the twenty-first century. Neither immediate nor very remote movements to a net reproduction rate of 1.0 seem probable.

There are dual conjectures in these or other hypothetical paths to transition in the population of mainland east Asia. Since the projected future populations are based on estimates of past and present populations and hypothetical dynamics, the distances to be traversed in decline and the sizes of the ultimate stable populations implicit in assumed transitions may be erroneous. Then, too, dates when the net reproduction rate may reach 1.0 are selected in relation to the presence or absence of current transition and the speed of its movements in relation to the assumed transitions. These, too, may be in error.

The degrees of certainty as to the size, structure and dynamics of the present populations of middle south and southeast Asia are far greater than those for mainland east Asia. Since present age structures are heavily weighted with youth and the fertility of women is higher, the multiplication of numbers inherent in any future paths of fertility is greater. Since high fertility persists in 1970, assumptions of completed transition to net rates of 1.0 prior to the end of the century are unduly conjectural. Since there are population policies and family planning programmes in most of the countries, the postponement of a net reproduction rate of 1.0 beyond the first quarter of the twenty-first century is not consistent with probable futures.

In 1970 the population of middle south Asia was 735 million. The birth rate of the preceding five-year period was 42.1, the death rate 15.4. The average annual growth was 2.7 per cent (table 3). If fertility declines and the present decline in mortality continues, to yield a net reproduction rate of 1.0 in 2000-2005, the population will reach 1,000 million by 1985 and 1,300 million by 2000. The maximum size of 2,000 million will be reached in 2100.

The achievement of a net reproduction rate of 1.0 in 2000-2005 implies the completion of transition in the large population of middle south Asia in about thirty-five years. This is a relatively swift movement by historical standards, whether the focus is European or Asian. If fifty-five years is required for the transition, growth continues to the end of the twenty-first century and the maximum population is 2,900 million. Twenty years' delay in the completion of transition adds 1,000 million people to the size of the stable population at the end of the next century.

The population of the southeast Asian region was estimated at 288 million in 1970. The birth rate for the years from 1965 to 1970 was 43.1, while the death rate was 14.2. The annual rate of growth was 2.9 per cent. If the transition in fertility that yields a net reproduction rate of 1.0 at very low levels of mortality occurs over the thirty-five years between 1965-1970 and 2000-2005, the population will reach a maximum of 842 million at the end of the twenty-first century. If the transition occurs over the fifty-five years between 1965-1970 and 2020-2025, growth will continue through the first quarter of the twenty-second century and the maximum population will be 1,300 million. Whether the transition to a net reproduction rate of 1.0 takes thirty-five or fifty-five years, the time between the beginning of substantial decline in fertility and the stabilization of numbers will be almost a century and a half. If transition is completed in thirty-five years, the maximum population will be three times the initial one. If the completion of transition occurs in fifty-five years, the maximum population will be four times the initial one.

The tracing of paths of transition to net reproduction rates of 1.0 and the estimation of maximum future populations implicit in these transitions are not predictions. No populations will maintain regular changes in vital rates over the next century. The changes that will occur are related, not only to present demographic facts, but to policies, plans and actions of governments and to transformations in the characteristics, opportunities and motivations of people. Hypotheses of continuing declines in mortality to low levels imply economic and social advance, nutritional sufficiency, health, shelter and amenities. The developments that are associated with declining mortality underlie the changes in ways of living, opportunities and aspirations that are compatible with increasing ages at marriage and smaller families. Population policies and family planning programmes that contribute to declining fertility and slower growth are essential not only to economic and social development but to the preservation of the conditions of health and the reductions in mortality that generate the population growth as long as fertility remains high.

Demographic modernization is an inseparable component in enduring development. Recognition of this fact and the assignment of adequate and timely priority to the intricate task of stimulating early and rapid declines in fertility are essential to the preservation and development of Asian peoples and cultures.

Regional classification of Asian countries

A. East Asia

1. Mainland region

China
Hong Kong
Mongolia
Macao

(Sarawak)

(Sabah)

Khmer Republic

Laos

Portuguese Timor

Brunei

2. Japan

3. Other east Asia

6. Southwest Asia

Northern Arab countries

Iraq

Syria

Lebanon

Jordan

Gaza Strip

Kuwait

Southern Arab countries

Saudi Arabia

Yemen

Protectorate of Southern
Arabia

Muscat and Oman

Aden

Bahrain

Trucial Oman

Oatar

Turkey

Israel

Cyprus

B. South Asia

3. Middle south Asia

India
Pakistan
Iran
Afghanistan
Sri Lanka
Nepal
Bhutan
Sikkim
Maldiv Islands

5. Southeast Asia

Indonesia
Viet Nam
Philippines
Thailand
Burma
Malaysia and Singapore
(Malaya)
(Singapore)

Table 1. Projected populations in selected Asian subregions, 1970-1985
(United Nations medium projections)

Variable	1986			1970		
	Mainland east	Middle south	southeast	Middle east	Middle south	southeast
Population, in millions	765	762	287	973	1,137	434
0-14	281	327	126	313	475	183
15-64	454	412	152	613	623	237
65 and over	30	23	8	48	39	14
Age structure	100	100	100	100	100	100
0-14	36.7	42.9	44.0	32.1	41.8	42.1
15-64	59.3	54.0	53.1	62.9	54.7	54.6
65 and over	4.0	3.0	2.9	4.9	3.4	3.3
Amount of increase, in millions	...	...	...	208	375	147
0-14	...	...	...	32	148	57
15-64 and over	...	...	...	158	211	85
65 and over	...	...	...	17	16	6
Percentage increase	...	...	...	27.2	49.2	51.4
0-14	...	...	...	11.4	45.3	44.8
15-64	...	...	...	34.9	51.3	55.6
65 and over	...	...	...	56.1	68.4	73.3
Child-woman ratio	596	847	834	481	741	730
Dependent ages ratio	686	851	882	588	826	830
Percentage increase						
Men aged 15-64	...	...	...	35.2	51.1	56.8
Women aged 15-44	...	...	...	31.8	50.2	54.4

Table 2. Hypothetical transitions in mainland east Asia
(net reproduction rates (NRR) of 1.0) at various dates from 1980-1985 to 2040-2045

Periods, by period of NRR of 1.0	Population (millions) ^{a/}	Annual growth (percentage) ^{b/}	Vital rates (per thousand) ^{b/}		Expectation of life at birth, female	Reproduction rates	
			Births	Deaths		Gross	Net
In 1980-1985							
1965-1970	773.2	2.09	35.5	14.6	52.0	2.40	1.79
1980-1985	940.9	0.90	19.4	10.4	59.0	1.21	1.00
1995-2000	1,089.9	0.97	19.4	9.6	64.5	1.13	1.00
2015-2020	1,243.0	0.48	15.0	10.1	70.0	1.07	1.00
2045-2050	1,338.8	0.11	13.7	12.7	74.0	1.03	1.00
2070-2075	1,362.6	0.01	13.5	13.4	74.0	1.03	1.00
In 2000-20005							
1965	773.2	2.09	35.5	14.6	52.0	2.40	1.79
1980-1985	1,020.0	1.72	27.9	10.7	59.0	1.85	1.53
1995-2000	1,254.2	1.20	20.9	8.8	64.5	1.29	1.15
2015-2020	1,500.2	0.80	16.8	8.8	70.0	1.07	1.00
2045-2050	1,712.5	0.23	14.0	11.7	74.0	1.03	1.00
2070-2075	1,748.4	0.05	13.6	13.1	74.0	1.03	1.00
In 2020-2025							
1965-1970	773.2	2.09	35.5	14.6	52.0	2.40	1.79
1980-1985	1,043.0	1.95	30.2	10.8	59.0	2.03	1.68
1995-2000	1,358.9	1.69	25.6	8.7	64.5	1.67	1.48
2015-2020	1,773.6	1.08	18.6	7.8	70.0	1.18	1.11
2045-2050	2,187.5	0.46	14.5	9.9	74.0	1.03	1.00
2070-2075	2,306.7	0.09	13.7	12.8	74.0	1.03	1.00
In 2040-2045							
1965-1970	773.2	2.09	35.5	14.6	52.0	2.40	1.79
1980-1985	1,054.6	2.06	31.3	10.8	59.0	2.13	1.76
1995-2000	1,412.3	1.93	27.8	8.6	64.5	1.86	1.64
2015-2020	1,986.7	1.55	22.8	7.3	70.0	1.49	1.40
2045-2050	2,727.8	0.74	15.8	8.4	74.0	1.03	1.00
2070-2075	3,060.2	0.27	13.9	11.2	74.0	1.03	1.00

Source: T. Frejka, op. cit.

a/ Total populations estimated from projected female populations.

b/ Vital rates and percentage changes, female population.

Table 3. Hypothetical transitions in south Asian regions (net reproduction rates (NRR) of 1.0) in 2000-2005 and 2020-2025

Periods, by period of NRR of 1.0	Population (in millions) ^{a/}	Annual growth (percentage) ^{b/}	Vital rates (per thousand) ^{b/}		Expectation of life at birth, female	Reproduction rates	
						Gross	Net
			Births	Deaths			
Middle south Asia							
In 2000-2005							
1965-1970	735.1	2.67	42.1	15.4	50.0	2.00	2.17
1980-1985	1,037.5	2.19	32.4	10.5	57.5	2.20	1.78
1995-2000	1,344.4	1.47	22.9	8.2	63.5	1.39	1.22
2015-2020	1,662.4	0.98	17.8	8.0	69.0	1.08	1.00
2045-2050	1,947.0	0.29	14.2	11.4	73.5	1.04	1.00
2070-2075	2,893.0	0.11	13.8	12.7	73.5	1.04	1.00
In 2000-2005							
1965-1970	735.1	2.67	42.1	15.4	50.0	3.00	2.17
1980-1985	1,069.8	2.50	35.6	10.6	57.5	2.47	2.01
1995-2000	1,505.1	2.18	29.8	8.0	63.5	1.94	1.70
2015-2020	2,098.5	1.33	20.1	6.8	69.0	1.24	1.15
2045-2050	2,709.0	0.57	14.8	9.1	73.5	1.04	1.00
2070-2075	2,893.0	0.11	13.8	12.7	73.5	1.04	1.00
Southeast Asia							
In 2000-2005							
1965-1970	288.1	2.89	43.1	14.2	52.0	3.00	2.26
1980-1985	415.8	2.32	32.7	9.5	59.5	2.18	1.83
1995-2000	549.6	1.59	23.1	7.2	65.5	1.37	1.23
2015-2020	690.3	1.05	17.6	7.1	71.0	1.06	1.00
2045-2050	817.7	0.03	14.0	11.0	74.5	1.03	1.00
2070-2075	838.1	0.06	13.5	12.9	74.5	1.03	1.00
In 2020-2025							
1965-1970	288.1	2.89	43.1	14.2	52.0	2.00	2.26
1980-1985	429.4	2.65	36.1	9.6	59.5	2.47	2.07
1995-2000	619.3	2.34	30.4	7.4	65.5	1.94	1.74
2015-2020	884.2	1.44	20.3	5.9	71.0	1.23	1.16
2045-2050	1,161.1	0.61	14.7	8.7	74.5	1.03	1.00
2070-2075	1,247.9	0.12	13.7	12.4	74.5	1.03	1.00

Source: T. Frejka, op. cit.

^{a/} Total populations estimated from projected female populations.

^{b/} Vital rates and percentage changes, female populations.

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TOPIC 2: MANPOWER AND EMPLOYMENT IN THE CONTEXT OF ECONOMIC DEVELOP- MENT

POPULATION GROWTH, MANPOWER AND EMPLOYMENT IN COUNTRIES OF ASIA AND THE FAR EAST

by

the ECAFE secretariat

The First Asian Population Conference recommended that "measures designed to promote fuller utilization of human resources should be accorded the same importance and urgency as those aimed at moderating population growth". ^{1/} The joint ESCAP/ILO Seminar on Interrelation between Population and Manpower Problems, held from 18 to 30 January 1971 in Bangkok, examined this proposition and recommended that research and training on the Interrelationships of population, manpower and economic development in the region be promoted. ^{2/} As a follow-up of the Seminar, ESCAP is undertaking a comparative study entitled "population aspects of manpower and employment." This has two parts: in the first, the object is to provide a broad spectrum of the regional situation and in the second case studies of selected countries will be undertaken in collaboration with country experts to explore the interrelations between population change and manpower and employment conditions and problems. The present paper is a brief summary of the analysis so far undertaken for the first part of the study.

The regional study will cover only five main topics: (a) concept and measurement of labour force and employment, and availability of data; (b) association between the growth of population and that of manpower and the labour force; (c) effects of population change, by sex and age group, on the structure of the labour force; (d) the relation between the growth of urban and rural population and the labour force in the agricultural and non-agricultural sectors; and finally (e) association between social and economic factors and the change in total and age-specific labour force participation rates.

Owing to the dearth of reliable data it has not been possible to include all countries even in the first part of the study. Only those countries which have had at least two reliable population censuses or surveys in the last fifteen years are taken into consideration. Again, the number of countries considered varies in the analysis of one aspect or another, according to the availability of data for each of them. The countries thus included are: Australia, Fiji, Hong Kong, Iran, India, Indonesia, Japan, Malaysia, New Zealand, the Philippines, the Republic of Korea, Sri Lanka and Thailand. Some data recently made available by the 1970-

^{1/} *Report of the Asian Population Conference and selected papers* (United Nations publication, Sales No. 65.11 F.11).

^{2/} *"Interrelation between Population and Manpower Problems"*, report and selected papers of a regional seminar, Asian Population Studies No. 7 (E/CN. 11/1015).

1971 population censuses are also used for a few countries such as Japan, Indonesia, India and Hong Kong.

Concepts and measurement of labour force and employment and availability of data

Studies on labour force and employment in the countries of the ESCAP region are often handicapped, owing not to lack of techniques of analysis but to differences in the definition of the concepts of "labour force" and "employment", and the availability and reliability of data. The data in censuses and surveys are generally obtained through the use of the gainful worker and labour force approaches.

With the gainful worker approach all persons who have a profession, occupation or trade are considered workers and the aggregate of such persons constitutes the work force. A gainful occupation is defined as an occupation by which the person who pursues it earns money or money equivalent or in which he assists in the production of marketable goods. ^{3/}The gainful worker approach has (i) the lack of specific time reference for reporting activity, (ii) omission of persons seeking first employment, if they have no occupation to report, (iii) over-reporting of activity by persons who are not actually working or seeking work, such as retired persons who might report occupation.

In the labour force approach, which has been used in most countries in the region, a person is asked to report about his actual activity during a specified reference period, such as last week or last month. ^{4/}The labour force then comprises those individuals of either sex who were either working or seeking work during the reference period. Occupations, though included in the census or survey questionnaire, are no longer the principal basis for determining the labour force participation.

Although the technique of measurement of the labour force is based essentially on a behaviouristic approach, the complexity of employment and unemployment in the economy does not permit a rigid adherence to the concept. Employed persons, for example, include not only those who are actually at work during the reference period, such as employers, persons who work on their account, wage-earners, salaried employers and unpaid family workers, but also those who had a job in which they had already worked but from which they were temporarily absent because of illness or injury, industrial dispute, vacation or other leave of absence, absence without leave or temporary disorganization of work due to such reasons as bad weather or mechanical breakdown. ^{5/6/}

Similarly, unemployed persons should include not only all persons actively seeking work for pay and profit, including those who never have worked before, but also those who are temporarily out of work because of illness or because

^{3/} Philip M. Hauser, "A new approach to the measurement of the work force in developing areas", University of Chicago, 1971, pp. 3-5.

^{4/} *Ibid.*, pp. 5-7.

^{5/} *Principles and Recommendations for the 1970 Population Censuses* (United Nations publication, Sales No. 67. XVII.3), p. 62.

^{6/} International Labour Organisation, *The International Standardization of the Labour Force*, Geneva 1959.

they are making arrangements to start a new job, or because they are on lay-off without pay. 7/ Difficult problems arise in the definition and identification of disguised unemployment and underemployment.

Since information is commonly obtained from large-scale operations such as censuses, and in view of the rather complicated nature of the subject under investigation, it is hardly to be expected that data of a high quality will be produced.

For example, the minimum age used as a basis for obtaining the labour force information in the latest censuses varied from 5 years in Sri Lanka to 15 years in Japan (table 1). As an example of differences within a country, Pakistan used 12 years in 1951 and 10 years in 1961; Thailand used 15 years in 1956 and 11 years in 1960; the Republic of Korea used 14 years in 1955, 13 years in 1960 and 14 years again for 1966. It seems that no upper limit of age for labour force participation is usually observed in countries of the region and that all persons above the lower limit of working-age persons are included in the labour force.

In some countries, armed forces, inmates of institutions, persons living on reservations, persons seeking work for the first time, seasonal and part-time workers and unemployed are considered as inactive population. 8/ The extent to which unpaid family workers assisting in family enterprises are included among the economically active population varies considerably from one country to another. These problems are particularly difficult in comparisons between countries of the economically active female population. In most countries of the region, relatively large numbers of women assist on farms or in other family enterprises without pay and the criteria adopted for determining the extent to which such workers are counted among the economically active vary from country to country. Classification of data on labour force by industry and occupation is also affected by various definitions adopted in successive censuses. 9/

Labour force participation

Table compares the proportion of population which is in the labour force with the proportion of population in the working ages (15 to 59). The comparison of the two figures provides a rough indication of the difference between potential and actual labour force participation in selected countries of the region for the latest two or three census years.

7/ *Ibid.*

8/ Unemployed persons were often not included in the labour force (Brunei in 1960 population census, Malaysia in 1957 and 1960, Republic of Korea in 1955 for unemployed at age 60 and over). Armed forces were sometimes not included in the labour force (Republic of Korea in 1966 population census, Pakistan in 1961, the Philippines in 1960, Australia in 1961 for armed forces stationed outside the country). In the 1961 population census, India did not include persons seeking work for the first time. Australia in the 1961 and 1966 population censuses excluded full-blooded aborigines. Fiji in the 1956 census excluded female unpaid domestic workers, some of whom undoubtedly assist in family enterprises. Western Samoa included female unpaid family workers in agriculture in the 1956 census but excluded them in the census in 1966 (International Labour Organisation, *Yearbook of Labour Statistics*, Geneva 1970).

9/ International Labour Organisation, *Yearbook of Labour Statistics*, Geneva 1970.

In another paper presented to this Conference, ^{10/}it is shown that, in 1970, the total population of working age in the region was around 1,087 million, constituting 55 per cent of the total population. It is anticipated that in absolute terms, this population might be doubled by the end of the century and that its proportion in the total might also increase to about 60 per cent. If the current labour force participation rates are viewed against this background, it is likely that the increase of the potential labour force will be accelerated and will create serious problems for developing countries of the region, which are already faced with problems of unemployment and underemployment.

The growth rate of labour force participation during the remainder of the century will far exceed the rate of growth of the total population. Owing to the prevalence of high fertility during the past decades, the current pressure of the dependency ratio is as high as 83 persons in the dependent ages per 100 persons in the working ages. The corresponding ratio in the more developed regions of the world is about 60 and in Japan it is only 53. ^{11/}

Table 2 presents average growth rates of total population, population in the working ages and population in the labour force in selected countries based on the two latest census figures available. It is observed that in Australia, Hong Kong, Japan and New Zealand, the growth rate of population in the working age bracket is higher than the growth rate of total population. In all these countries fertility had either declined to a low level or was declining significantly. In all other countries the rate of population growth is higher than the rate of growth of the population in the working age bracket. This second group of countries is characterized by high fertility rates, but include Fiji, Singapore and Sri Lanka in which, although fertility decline has set in, the proportion of children under 15 years has not yet been much affected. It should be pointed out that the information given in table 2 is according to the latest available census data, but that only in the cases of Hong Kong, Indonesia, Japan and Thailand do the data relate to the last census. Since fertility rates have begun to decline in several countries lately, the growth rate of the working age population will be accelerated and will exceed the rate of growth of the total population during the next several decades until their populations assume stability in terms of birth and death rates.

Table 2 also provides a comparison of rates of growth of labour force with those of total population and population of working age. The rate of growth of the labour force is higher than that of the total population for Australia, Hong Kong, Japan and New Zealand. In addition, the Philippines, which is known for its high fertility rate, also has a higher rate of labour force growth than its population. It is also noted that this country has the highest growth rate (of about 10 per cent) of the female labour force. This might be an indication of the pressure of large families forcing wives and daughters to join the labour force to supplement the family income.

The growth rate of the labour force in countries where the decline of fertility was not significant during the period for which data are presented is even lower than the growth rate of population in the working age. On the other hand, the growth rate of the labour force for Australia, Japan and New Zealand is greater

^{10/}"The demographic situation in the ESCAP region" (POP/APC. 2/BP/1).

^{11/}*Ibid.*

than the growth rate of their populations in the working age bracket. For Hong Kong both the rates are equal; they may have been affected by immigration and emigration mainly of persons in the working age ^{12/}during the decade 1961-1971. Other countries, such as Malaysia, the Philippines and Thailand, also have higher rates of growth of labour force than of population in the working age. The higher rates of Malaysia and the Philippines are due to an upsurge in the rate of growth of female labour force participation, whereas Thailand data on labour force are based on a sample survey and may have been affected by chance variation.

On the basis of this evidence, it could be argued that, in countries where fertility rates decline, the rate of growth of the labour force would be accelerated. The acceleration of the growth rates of labour force would be higher for females than for males, as is evidenced by Australia, Hong Kong, Japan and New Zealand. More females freed from the burden of childbearing would join the labour force.

Female labour force participation has also increased at a higher rate than male in Fiji, 1956-1966; Indonesia, 1961-1971; Iran, 1956-1966; Malaysia, 1960-1968; the Philippines 1960-1965; the Republic of Korea, 1960-1966; and Singapore, 1957-1966. This is probably owing to the immediate effect of family planning programmes and activities and indicates that a reduction in fertility also has a short-term effect on the labour force.

But it must be admitted that fertility reduction is not the only factor in the increase of female participation in the labour force. Other factors such as pressure of large family size, education and literacy, status, appropriate job opportunities and cultural mores also influence their participation.

The relation between the growth of population and the change in the population that is in the labour force is thus complex, as it is affected by changes in the economic and social conditions of each country. Some economists might argue that labour force participation is determined by economic and social conditions rather than by demographic change. Others might contend that changes in fertility rates would not have any effect upon the labour force and employment situation for at least fifteen years. In other words, there is a feeling that demographic changes have long-term rather than short-term effects on labour force and hence on economic and social development. In the following paragraphs an attempt is made to clarify these viewpoints.

First, no one can deny the fact that population growth and growth of population in the working age are basic determinants of labour force participation. Changes in the rate of growth and composition of the population do influence the labour force participation rates, as has been shown in the preceding analysis. The average rate of annual growth of population increased from 0.8 per cent per annum in the 1940s to 2 per cent in the 1950s and 2.2 per cent in the 1960s. The average for the period 1900-1950 was 0.7 per cent, which is likely

^{12/}W.E. Collard, *Hong Kong Annual Department Report* (1970-1971), Immigration Department, Hong Kong, 1972.

to increase to 2.0 for the period 1950-2000. It should be noted that this is not a small change.

Even in a period of two years, the addition to the population of the region is of the order of about 100 million, which exceeds the combined population of Malaysia, the Philippines, Singapore and Thailand. This change in the population size is of great significance for a change in GNP and per capita income. Given the same rate of annual increase in GNP of two countries, the increase in the per capita income will be greater in the country with the lower rate of population growth. Furthermore, the greater increase in per capita income may accelerate the demographic change.

What is not being recognized is the concomitance of the triatic relationship between population growth, labour force and employment and economic growth. As current trends in population growth have significance for future economic development, so have past trends for current development. A smaller family increases the per capita income in the family, thus making available more food, and educational and health facilities and improving the productivity of workers. On the other hand, if productivity and efficiency are improved, underemployment and disguised unemployment might be reduced and the inflated demand for labour could decrease. This indicates the complexity of the interaction between population factors and economic development, which requires deep investigation.

Fertility is not the only demographic factor affecting labour force, employment and economic development. Reduction in mortality is also accompanied by reduction in morbidity, which in turn reduces the incidence of absenteeism, increases the length of working life and improves productivity. Similarly, migration of population in the working ages, particularly from rural to urban areas, creates problems for the labour market. It can be argued that population growth may not be a serious problem in the short run for those countries which have a high rate of economic growth, but such countries as Australia, Hong Kong, Japan, New Zealand, the Republic of Korea, and Singapore have already achieved low fertility rates or are making significant progress in this direction.

Although economic and social development facilitate change in labour force participation, the growth and age structure of the population are the basic factors in influencing such change, and changes in fertility rates do affect the employment situation in the short run as well as in the long run. On the other hand, the evidence as to the cause and effect relationship between the labour force participation and fertility, mortality and migration is not clear-cut, although it is certain that the interrelation exists. In view of the anticipated growth of population in the working ages, this interrelationship must be explored in depth to correct massive conditions of unemployment and underemployment in the developing countries of the region.

Table 1. Proportions of working-age population and of labour force in total population and intercensal variation in labour force participation rates in selected countries of the ECAFE region: latest censuses, 1953-1971

Country	Census year	Lower age limit of labour force	Both sexes					Male					Female				
			Population 15-59	Labour force 15-59		Variation of (5) between years	Total population	Population 15-59	Labour force 15-59		Variation of (9) between years	Total population	Population 15-59	Labour force 15-59		Variation of (13) between years	
				Total	Labour force				Total	Labour force				Total	Labour force		
																	Population 15-59	Labour force 15-59	Population 15-59	Labour force 15-59
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)			
1. Australia	1961	10	57.6	64.7	40.2	-	58.5	93.4	59.6	-	56.3	34.2	20.4	-			
	1966	15	58.4	67.1	40.0	-0.2	62.0	91.4	58.8	-0.8	57.3	41.7	25.0	4.6			
2. Brunei	1960	15	47.8	57.1	29.6	-	49.6	87.9	47.3	-	45.7	18.4	10.4	-			
	1965a	...	...	...	29.1	-0.5	...	...	46.4	-0.9	...	...	10.2	-0.2
	1967a	...	...	...	29.6	0.5	...	...	47.1	0.7	...	...	11.3	1.1
3. Burma	1953a	10	62.0	...	36.5	-	62.6	...	52.2	-	61.4	...	20.3	-			
	1957b	10	...	...	56.1	-0.4	...	...	53.8	1.6	...	...	18.9	-1.6
4. Cook Islands	1956	15	49.6	56.5 ^c	30.8	-	50.9	95.8	-	-	48.2	11.6	6.1	-			
5. Fiji	1956	15	48.9	51.0	27.0	-	48.8	93.3	49.4	-	48.9	6.0	3.0	-			
	1966	15	49.4	50.6	26.4	-0.6	49.2	92.1	48.0	-1.4	49.7	7.9	4.0	1.0			
6. Hong Kong	1961	6	54.4	66.3 ^d	38.7	-	55.6	91.6 ^d	53.8	-	53.2	38.8 ^d	22.8	-			
	1966 ^e	5	53.9	66.1 ^d	39.2	0.5	55.8	87.7 ^d	51.9	-1.9	52.9	43.5 ^d	26.2	3.4			
	1971 ^f	10	56.8	67.2 ^d	42.0	2.8	57.9	86.9 ^d	54.8	2.9	55.1	46.0 ^d	28.8	2.6			
7. India ^g	1951	...	56.9	...	39.5	-	57.4	...	54.3	-	56.3	-	23.7	-			
	1961	0	53.3	69.2	43.5	4.0	53.6	91.5	57.1	2.8	53.0	45.1	28.0	4.3			
	1971 ^h	0	...	...	33.5	-10.0	...	...	52.5	-4.6	...	...	13.2	14.8
8. Indonesia	1961 ⁱ	10	53.4	59.6	35.9	-	52.3	89.6	52.7	-	54.4	31.4	19.6	-			
	1971 ^j	10	51.5	57.0	33.9	-2.0	50.2	81.3	46.0	-6.7	52.7	36.2	22.0	2.4			
9. Iran	1956	10	51.5	52.9	32.0	-	51.2	94.9	56.9	-	51.9	9.6	6.2	-			
	1966 ^k	10	47.4	52.2	30.2	-1.8	46.9	89.7	50.7	-6.2	47.8	12.7	8.3	2.1			
10. Japan	1955	15	58.5	70.5	44.8	-	55.7	87.7	55.7	-	59.0	54.2	34.3	-			
	1960	15	61.1	70.7	47.1	2.3	60.6	87.7	58.5	2.8	61.6	54.5	36.2	1.9			
	1965	15	64.7	68.4	49.1	2.0	64.4	84.3	61.2	2.7	65.0	53.2	37.5	1.3			
	1971	15	68.8	69.9	50.4	1.3	68.8	85.8	62.4	1.2	68.7	54.4	38.7	1.2			
11. Khmer Republic	1962	10	51.3	75.0	43.6	-	50.9	88.8	50.6	-	51.8	61.6	36.7	-			

Table 1. (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
12. Korea, Republic of	1955	14	53.1	...	49.1	-18.9	52.1	81.7	52.4	-9.5	54.0	30.0
	1960	13	51.1	54.7	30.2	-0.5	48.6	75.1	42.9	-2.2	53.6	34.1
	1966 ¹	14	51.3	54.5	29.7		51.0		40.7		51.6	
13. Malaysia Sabah	1951	...	56.6	69.8 ^c	42.2		56.3	90.3 ^c	56.1		56.9	45.3 ^c
	1960	15	52.6	68.8 ^c	38.9	-3.3	53.2	91.3 ^c	52.1	-4.0	51.9	43.9 ^c
West Malaysia	1957	10	51.5	60.9 ^c	34.5		51.8	88.7 ^c	50.5		51.2	
	1962	...	...	64.7 ^c	33.5	-1.0	-	86.8 ^c	44.8	-5.7	-	43.1 ^c
14. Nepal	1954	...	55.9	...	50.3		55.0	...	60.7		56.7	
	1961	15	54.6	79.6	45.8	-4.5	53.8	97.0	55.3	-5.4	55.4	63.0
15. New Zealand	1956	...	55.8	62.7	37.6		56.4	93.5	57.0		55.3	35.7
	1961	...	54.7	63.3	37.1	0.5	55.4	92.5	55.3	-1.7	54.0	33.2
	1966	...	55.4	64.5	38.3	1.2	56.0	91.3	55.5	0.2	54.7	36.8
16. Papua New Guinea	1966 ^m	...	...	...	31.9		...	...	36.2		...	...
17. Pakistan 1951 ⁿ	1951 ⁿ	12	...	41.5 ^c	30.7		...	72.9 ^c	54.6		...	5.1 ^c
	1961	10	49.5	55.0 ^c	33.5	2.8	49.6	90.7 ^c	55.7	1.1	49.4	14.6 ^c
18. Philippines	1960	10	50.0	55.9 ^d	31.5		48.9	84.4 ^d	46.5		51.0	27.9 ^d
	1965 ^o	...	49.2	63.5 ^d	33.3	1.8	49.0	83.4 ^d	43.9	-2.6	49.3	43.4 ^d
19. Singapore	1957	10	53.4	58.9	33.2		54.9	89.7	57.6		51.8	22.6
20. Sri Lanka	1953 ^p	...	54.9	60.1	36.8		56.2	85.3	53.0		53.5	30.7
	1963	5	51.9	59.2	34.1	4.1	52.5	87.4	49.8	-3.2	51.4	28.0
21. Thailand	1956 ^q	15	55.1	...	51.		54.2	...	52.3		56.0	
	1963	11	52.1	88.5	52.7	1.7	52.1	91.6	54.3	2.0	52.1	85.4
22. Viet-Nam, Republic of	1956	15	...	...	39.4		...	...	51.9		...	...
	1964	...	...	...	40.0	0.6	...	...	...		...	...
23. Western Samoa	1961	...	45.3	...	24.4		44.8	...	42.9		46.2	...
	1966	...	44.5	56.4	26.9	2.5	44.3	86.6	41.4	-1.5	44.7	24.4

Table 1 (Continued)

Source: United Nations, *Demographic Yearbook 1970*, table 12.

International Labour Office, *Yearbook of Labour Statistics 1970*.

- a/ Official estimates.
- b/ *De jure* population in 252 towns only, approximating the urban area of the Union; results of the first stage of a multistage sample census.
- c/ For age group 15 years and over (labour force by age group not available).
- d/ For age group 15-64 years.
- e/ Based on Commission for Census and Statistics, *Report on the By-census 1966*, volume II,
- f/ Census and Statistics Department, *Hong Kong Population and Housing Census 1971, Basic Tables*,
- g/ Data for 1961 and 1971, are not comparable because of a difference in definition of labour force.
- h/ Registrar General and Census, India, *Census of India (1971), Paper I - Supplement, Provisional Population Total*.
- i/ Data based on a 10 per cent sample of census returns. Economically active population excludes a large number of females classified as homemakers but who are also engaged in economic activity.
- j/ Central Bureau of Statistics, "Population census, Indonesia 1971, (advanced tables)," (Djakarta, 1972).
- k/ Including unsettled population and nomadic tribes (about 0.03 per cent of the total population).
- l/ Based on a labour force survey; the labour force excludes persons over 60 years of age who were unemployed.
- m/ Based on a 10 per cent sample survey (of rural villages and a complete enumeration in other areas).
- n/ Excluding adjustment for underenumeration in urban areas amounting to 5 per cent.
- o/ Based on the National Sample Survey of Households, 1965.
- p/ Including 0.7 per cent adjustment for underenumeration.
- q/ Based on the results of a sample survey covering 2,241 villages and 64 large municipalities.
- r/ Labour force includes a large number of female unpaid family workers in agriculture.

Table 2. Intercensal growth rates of total population, population of working age and labour force (percentage) in selected countries of the ECAFE region, 1953-1971

Countries	Census years	Total population (all ages)	Population of working age (15 yr and over)	Labour force (15 yr and over)	Total population (all ages)	Population of working age (15 yr and over)	Labour force (15 yr and over)	Total Population (all ages)	Population of working age (15 yr and over)	Labour force (15 yr and over)
1. Australia	1960-1966	1.89	2.13	2.85	1.81	2.03	1.60	1.97	2.25	6.13
2. Fiji	1956-1966	3.19	3.06	2.97	3.05	2.81	2.76	3.33	3.33	6.03
3. Hong Kong ^a	1961-1971	2.28	3.08	3.08	2.18	3.03	2.39	2.40	3.15	4.58
4. Indonesia ^b	1961-1971	2.06	1.71	1.35	2.04	1.60	0.59	2.08	1.81	3.11
5. Iran	1956-1966	2.78	2.10	1.77	2.95	2.22	1.46	2.60	1.97	4.53
6. Japan ^c	1965-1970	1.01	1.45	1.78	1.02	1.48	1.76	0.99	1.41	1.82
7. Korea ^d	1960-1966	2.57	2.40	2.27	2.62	3.07	1.69	2.51	1.73	3.70
8. Malaysia, West										
Malaysia ^e	1960-1967/68	2.17	1.71	2.28	1.90	1.24	1.02	2.45	2.20	5.27
Sabah	1951-1960	3.39	2.64	2.49	3.49	2.90	2.70	3.28	2.36	2.02
9. New Zealand	1961-1966	1.96	2.09	2.55	2.04	2.17	2.12	2.08	2.24	4.41
10. Philippine ^f	1960-1965	3.08	3.00	4.47	3.08	3.17	2.84	3.08	2.82	9.86
11. Singapore ^g	1957-1966	3.18	3.06	2.11	2.79	2.40	1.38	3.61	3.76	4.94
12. Sri Lanka ^h	1953-1963	2.66	2.37	1.95	2.52	2.16	2.19	2.81	2.60	1.12
13. Thailand ⁱ	1960-1970	2.63	2.21	2.30	2.57	2.05	2.57	2.69	2.37	1.98

Sources: International Labour Office, 1970 Yearbook of Labour Statistics Demographic Yearbook 1964, and Demographic Yearbook 1970, (United Nations publications Sales Nos. 65.XIII.I and E/F 71 XIII.I).

^a/ For 1971, Census and Statistics Department, Basic Tables, Hong Kong Population and Housing Census 1971.

Table 2 (continued)

- b/ Central Bureau of Statistics, "*Advance tabulations of the 1971 population census in Indonesia.*"
- c/ For 1970. Bureau of Statistics, Office of the Prime Ministry, *1% Sample Tabulations of the 1970 Population Census in Japan*, (Tokyo, 1972).
- d/ For 1966, the labour force survey as reported in *Demographic Year-book 1970*, op.cit.
- e/ Department of Statistics, *Socio-Economical Sample Survey of Household, Malaysia 1967-1968, Employment and Unemployment.*
- f/ Bureau of the Census and Statistics, *Journal of Philippine Statistics, second quarter 1969, vol. 20.*
- g/ For 1966, Ministry of National Development and Economic Research Center, *Singapore Sample Household Survey, 1966, Report No. 1, Tables Relating to Population and Housing.* (University of Singapore, 1967).
- h/ 1970 data are taken from the Government of Thailand "Demographic situation of Thailand." Second Asian Population Conference, Tokyo, 1-13 November 1972.
- i/ Department of Census and Statistics, *Population Census in Ceylon 1953*, Colombo.

TOPIC 3: IMPLICATIONS OF POPULATION GROWTH FOR AGRICULTURAL AND INDUSTRIAL DEVELOPMENT.

POPULATION, FOOD SUPPLY AND NUTRITION*

by

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“At least 20 per cent of the people do not get enough to eat and some 60 per cent do not get food of the right type. Poor physique, low resistance to disease and low working efficiency are the general lot of these people. Low food intake leads to low level of activity, low level of activity leads to low productivity and low productivity, in turn, to more poverty and to more inadequate food supplies.” In these words, the **Third World Food Survey** described the vicious circle in which the population of the less developed countries, growing at an enormous and accelerating rate of over 2 per cent per annum found themselves in the beginning of the 1960s. (1) The greatest factor contributing to the situation was a rapid decline in mortality during the 1950s. It was a step of far-reaching significance for man's future, therefore, when the First Asian Population Conference, in 1963, recognized that the rapid population growth impeded economic and social development, accepted the need to influence the population growth to bring it in balance with resources, and urged countries to develop appropriate policies and programmes for the purpose. A family planning programme, however, takes time to make headway in checking the numbers. In the meanwhile, food increases became harder and harder to attain, especially in countries faced with an acute shortage of land. Imports began to mount up. By 1965 it appeared that many of the countries would not be able to feed their growing populations from their own production.

About this time, there occurred the greatest break-through in agriculture of the century. Although limited to cereal crops, particularly wheat and rice, it holds the promise of doubling or eventrebbling the yield per unit of land and gives hope that hunger for calories (under-nutrition) can be conquered, provided that the purchasing capacity of the poor is increased to buy the needed quantity of food. The decade was also marked by other developments in food, notably those relating to new processes of synthesizing protein. These gave hope that protein hunger, which is described as “the worst of the specific hungers that beset mankind and the principal cause of malnutrition in infants and children”, can also be conquered. Indeed, many people began to see in these technological achievements a recognition that man's needs for protein, like those for minerals and vitamins, need not all be drawn from the land, and hailed the achievements as of special value to countries in Asia.

The object of this paper is to review the food and nutrition situation in recent years in the light of these developments and point out issues for the 1970s and the 1980s which will help provide a better understanding of the population problem in the achievement of the goal of ensuring an adequate diet for all. The

* The opinions expressed in this paper are the author's own and do not necessarily reflect the views of his organization or those of the ECAFE secretariat or of the United Nations.

opportunity will also be taken to identify the gaps in information and to make suggestions for action regarding food and nutrition planning.

Current levels of diet: their adequacy

Table 1 gives an idea of the current levels of food supplies in the less developed and the developed countries of the world. The great disparity in the levels of food supply is at once evident. In particular, it will be seen that the calorie level in the less developed countries is only two-thirds as high as in the developed countries, protein level is one-half, animal protein one-fifth and fats only one-third as high. The disparity is larger when we compare the levels in Asia and the Far East with those in the developed countries. Actually, the disparity in the levels of food supplies in the less developed and the developed countries has been growing over the years. This is best seen from table 2. The developed countries have been able to increase the food available for consumption by 24 per cent over the base period. In contrast, the less developed countries have barely increased the **per capita** availability over the same period. The growing disparity does not indicate that the nutritional levels in the developed countries have improved; nor does it imply that the supply in the less developed countries has become increasingly inadequate for a healthy active life. To assess their adequacy, calorie and nutrient supplies must be compared with the corresponding requirements.

Such a comparison in respect of the energy and protein supply is shown in table 1. The requirements shown in this table are based on the latest knowledge available. It will be seen that the energy supply in the less developed countries taken as a whole, falls short of requirements by about 4 per cent. Small as the deficit is, its significance cannot be overstressed. Rich and privileged people everywhere eat all they need and perhaps more; the poor will take only what they can afford which may not always fully meet their needs. This is well brought out in table 3, relating to India and Indonesia. While there is little doubt that consumption in Indonesia has been underestimated, the trend in the calorie consumption with rising income is unmistakably upwards. Clearly, an appreciable part of the population in the less developed countries must be undernourished.

For protein, there is no overall gap. Far from an overall gap, there is a large excess. As table 1 shows, the supply of protein **per capita** is nearly twice as large as the average requirement. Even so, clinical surveys show that the protein deficiency exists and is widespread. Clearly, an appreciable part of the population is not getting adequate protein from the diet (see table 3). However, a majority of these people also do not get adequate calories from their diet. As will be shown later, the protein deficiency that is reported to be so widespread is, for the most part, the indirect result of the inadequate energy intake.

By contrast, we find that in the developed countries, such as the United States, there is no insufficiency of food even in the poorest classes. Thus, table 4 shows that the calorie supply in the United States, while increasing with income, is not appreciably influenced by rising income on anything like the scale noticed in poor countries, such as India or Indonesia. Further, even for the lowest income groups in the United States, the level of calorie supply as well as that of protein supply are seen to be higher than the respective average requirements.

Incidence of undernutrition

Although classification of consumption by income level shows that there is a large proportion of the households in the less developed countries who, for want of income, live on quantitatively inadequate diets and who thus remain underfed, such classification in itself is not adequate for estimating this proportion. For this, we need to formulate the problem formally in quantitative terms. Thus, if x and y denote intake and requirement and $f(x, y)$ a bi-variate distribution, then we can express the proportion of undernourished formally as

$$u = \iint_{x < y} f(x, y) dx dy \dots\dots\dots(1)$$

The evaluation of this expression, however, presents a serious difficulty owing to lack of information on the frequency function $f(x, y)$. Conceptual difficulties also arise in estimating y for any given x . The requirement y varies with age, sex, body weight, level of physical activity and a host of other factors which cannot be quantified. Even for the same individual, requirement will vary from day to day with little or no correlation with intake, such intravariability accounting for a significant part of the total variability in requirement. What are generally available are the calorie intake distributions of households or a nutrition unit 1/ basis and information on the range of variation to be expected in requirements of healthy active adults of the type represented by the nutrition unit. It follows that, in any attempt to evaluate expression (2), there is a need to reduce it, in terms of known information. It is also necessary to postulate a model expressing y in terms of the average requirement and the contributions representing interindividual and intra-individual deviations from known average requirement.

Clearly, the present paper is not the place to elaborate on these methodological aspects any further. They have been referred to in order to emphasize the need for caution lest the size of the problem be exaggerated through emotional involvement. Protein gap and the promotion of programmes to close it is a case in point. Another example relates to estimates of the incidence of hunger, which vary from two-thirds to a negligible proportion. It is the writer's view that the differing interpretations placed on requirement in the study of intake distribution primarily account for the large variation in the assessment of these problems.

It will suffice to refer the reader to the writer's earlier papers. (3, 4) These papers presented data on the distributions of households by calories supplies per nutrition unit, and used information on calorie requirement scale and on the variability to be expected in requirements of healthy active adults of the "reference" type to estimate the incidence of undernutrition in the population. In essence, the method is to determine the proportion of households per nutrition unit below the lower critical limit, i.e. the average requirement minus three times the standard deviation of requirement. Considerable additional data have since become available for countries in Asia, notably Malaysia, Burma, Sri Lanka, India, Pakistan, the Philippines, Japan and Iran. This again is not the

1/ A nutrition unit for calories has the same requirements as those of the "reference" man.

place to present them. They show that, although the overall calorie gap is small, some 25 per cent of the people appear to be undernourished, i.e., they do not get an adequate quantity of diet (calories).

Protein malnutrition

The approach outlined above can also be used for estimating the incidence of protein malnutrition. However, it is not enough to consider the distribution of protein intake alone; we need bi-variate distribution of protein and calorie intake because, when calorie intake is inadequate, protein in the diet is partially diverted to meeting energy needs. This is best brought out in table 5, based on the extensive data of short-term experiments on nitrogen balance in adults reviewed by Calloway and Spector (5). It will be seen that, when the total calorie intake is around 900, protein intake in excess of 10 is not retained by the body. As the calorie intake is increased to 1,600, the retention is also increased, but there is still the loss of some 12 g/day. With further increases in calorie intake, the loss becomes progressively smaller. It is only when the calorie intake is adequate and above 1.5 times the calories needed for basal metabolism (BMR) that a man is found to utilize the protein fully in amounts required to meet his body needs. This limit happens to be approximately the same as the lower critical limit for assessing the incidence of undernutrition. Incidentally, it is interesting to observe that excess protein over and above body needs does not leave any benefit on protein balance.

Table 6 illustrates the application of the method to household dietary data collected in two Indian States, Madras and Bihar. It will be seen that 49 per cent of the households in Madras and 17 per cent in Bihar do not get adequate calories. The incidence of households with inadequate protein intake is seen to be 34 per cent for Madras and 5 per cent for Bihar. However, the majority of households with an inadequate intake of protein are also seen to have an inadequate intake of calories; for Bihar, all the households with an inadequate protein intake also have an inadequate calorie intake. Further, 21 per cent of the households in Madras and 12 per cent of those in Bihar, although getting enough protein, do not get enough calories. These must also be considered as protein-deficient. Altogether, the data show that nearly half of the total households in Madras and one-sixth in Bihar are protein-deficient. However, almost all the incidence of protein deficiency is the indirect result of inadequate calorie intake.

It follows that energy and not protein is the limiting factor in the diets of the people. Bi-variate data of the type shown in table 2 are not available for other countries, but there is ample evidence to show that the protein calorie concentration of diets in most of the countries is more than adequate to meet protein needs, even according to most recent estimates of requirements for protein and calories, provided that the diet is taken in quantities adequate to meet energy needs. (6, 7,8) Diets heavily dependent upon starchy roots, sugar or fat may have a protein calorie concentration lower than that required to meet protein needs, but such cases appear to be too few to be ascribed to the shortfall in total supplies.

It is the estimate of the calorie gap and its distribution, therefore, which are of overriding importance in evaluating the adequacy of food supplies for meeting

man's needs for protein. It follows that the incidence of protein deficiency in the less developed countries may be placed at about the same or only a slightly higher figure than that for the incidence of undernutrition.

Reasons for the difference between this assessment and the one held previously

The above conclusions on the relative role of low-protein and low-calorie intake in causing protein malnutrition are exactly the opposite of those of Scrimshaw and his co-workers who have thought that protein is the limiting factor and whose findings primarily form the basis of the United Nations programme for closing the protein gap. (9) The principal reason for reaching a conclusion so very different from that held previously is that interrelationships between protein and calorie intake have been taken into account by examining the diets simultaneously for the two variates; this was not done in previous studies. The other reason for the difference lies in the failure to take note of intravariability. By way of example, reference may be made to the use of a model due to Lorstad, to estimate the size of the problem. (10) The model was developed to fit in with the interpretation placed on requirements by the FAO/WHO Committee in the study of intake distribution and has lately considerably exercised the minds of the nutritionists (11, 12). The cardinal principle of this interpretation is that, as the intake falls below the recommended level, the probability of deficiency to the individual increases. To use the statistical jargon, if we use $F(y)$ to denote distribution function of requirement y , then $\{1-F(x)\}$ will denote the probability of requirement y exceeding given intake x and hence the probability of deficiency associated with a specified intake x . The principle stated by the FAO/WHO Committee merely states that $\{1-F(x)\}$ decreases as x increases, which is of course true. However, when used to evaluate the incidence, it gives

$$I = \int_{\text{over all } x} \{1-F(x)\} g(x) dx$$

It is easy to see that the incidence thus evaluated will be grossly exaggerated. As an example, if it is assumed that y and x are normally distributed with the same mean and standard deviation, then clearly the incidence will be one-half, regardless of any correlation between y and x . This means that 50 per cent of the population will be considered protein-deficient; whereas, in reality, no more than 0.5 per cent of the population should be considered to be deficient at the 1 per cent level of significance.

Once the stochastic character of the distribution of requirement arising from intravariability is disregarded and it is accepted that, at any specified intake, $\{1-F(x)\}$ represents the probability of deficiency, the recommended intake comes to be defined as that intake which gives for $\{1-F(x)\}$ a specified low probability, say .005, and the recommended intake so defined comes to be looked upon as the nutritional goal to attain for all individuals. As a corollary, it will be discovered that protein supplies will need to be increased several times to ensure that no more than 0.5 per cent of the people have an intake below the recommended level. The gap between what is available and what is needed to reach the goal is found to be so alarmingly large that it is possible to forget that many people may well have to eat at levels of over-consumption falling in the toxic range. As the writer has shown elsewhere, the logic amounts to assuming that an individual has a requirement for protein consistent with a population whose mean is $m \pm 3s$ and whose coefficient of variation is s/m , whereas, in

$m - 3s$

actual fact, the distribution of requirement has a mean m only and individual variability s . (13) It would appear that, without any physiological evidence, the nutritionist would want planners to raise the average requirement, as determined from balance studies, from m to $m + 3s$, an increase of some 150
 $m - 3s$

per cent. Little wonder that the protein problem has been described as the protein gap problem, with emphasis on increasing the supply rather than on creating an effective demand among those who are protein malnourished.

Past trends in food production and supplies

So far, an indication has been given of the existing inadequacies in food supplies. It was concluded that the supply gap for the less developed countries is small, of the order of 5 per cent for calories, but, nevertheless, 25 per cent of the people appear to be undernourished. For protein, there is not only no gap but there is a large excess. Despite this, protein malnutrition exists. But this is, for the most part, the indirect result of inadequate energy intake. The problem of food supply is thus not a problem of inadequate protein supply, as commonly believed, but largely one of maldistribution of food. If these views are accepted, what implications can be seen in recent trends?

Table 7 summarizes the trends in total and *per caput* food production. It will be seen that total food production increased at an annual rate of about 2.9 per cent in both the less developed and the developed countries. However, most of the annual increase in production, substantial as it was, has been wiped out by rapid population growth in the case of the less developed countries. In contrast, the developed countries retained nearly one-half of the average annual increase in food production.

The rapid increase in production, which began in the years of recovery immediately after the Second World War, continued until about the year 1960. Since then, the growth of production has been slower, while that of population has accelerated so that the *per caput* rate of increase fell from 0.8 per cent during 1954-1959 to 0.4 per cent during 1959-1964, and from 0.4 per cent to 0.2 per cent during 1964-1969. This is a steep rate of fall which caused serious concern in the mid-1960s. However, as the data for Asia show, there is already an indication of a reversal in this trend. Clearly, the recent break-through in agriculture has made a significant impact on *per capita* production in this region.

In the developed countries, the increase in production is nearly always due to a rise in yields; in the less developed countries, on the other hand, it is mostly achieved along traditional lines by bringing more land under cultivation and increasing the number of cattle. However, conditions are already appreciably changing. As table 8 shows, the rise in crop yields has contributed nearly 40 per cent of the total increase in the case of the less developed countries. The corresponding figure for livestock yields is nearly 30 per cent. The significance of the recent break-through is best appreciated when it is recalled that, only five years ago, the contribution of increase in productivity to the total output was almost negligible.

Past trends in calorie and protein supplies

The trends in production do not fully reflect the trends in **per capita** food supply available for human consumption because of external trade and changes in stocks. Table 9 shows these trends for calorie and protein available for consumption over the last decade. It will be seen that the average calorie supply per person per day improved in recent years, although the increases are quite modest: of the order of 50 calories over five years. Asia and the Far East, however, is an exception; the increase recorded is sizable of the order of 100 calories over the last five years. The reason for the modest increases in the developed countries is that, at current levels of income, their energy supplies are reaching saturation levels.

To appreciate the significance of the recent increases, the performance during the latter part of the decade needs to be compared with that during the earlier part. Thus, for Asia and the Far East, the performance in 1970 relative to 1965 stands in sharp contrast with that in 1965 relative to 1962. Considering that the primary need of the countries in Asia is more food (energy), the performance in 1970 is noteworthy and should materially improve the nutritional status of the people. As against this, other less developed countries as a whole, have recorded a declining trend of increases in calorie supply.

The trend of protein supply **per capita** is similar to that of calorie supply in the case of the less developed areas. As table 9 shows, the total protein intake has risen by nearly 2 g/day since 1965, but most of the improvement was due to improved supply of cereals in Asia. The situation was somewhat different in the developed areas. The rise in total protein supply in the developed areas has been 1.5 g **per capita** since 1965, i.e. an increase of 3 per cent in five years, but this improvement, unlike that in the less developed areas, was due to a large increase in animal protein intake which rose from 47 to 51 g, or 8 per cent.

The present level for calories brings Asia and the Far East within 6 per cent of the average requirement. Most of the improved supply came from increased availability of cereals. The programme for raising the high-yielding varieties of wheat and rice have clearly made a distinct impact on the availability of food. If the trend of improvement in cereal production continues, it may be expected that the energy supply **per caput** will be about equal to the average requirement in the course of seven or eight years.

Implications for the role of population in the achievement of nutritional goals

The technical possibilities of making gains in cereal yields are so large that there would appear to be little difficulty in maintaining the recent trend of improvement in the **per capita** supply over the next decade and in holding the supply **per capita** above the average requirement at least for some years thereafter, assuming of course that there is no fall in demand. Admittedly, this task of getting food production ahead of population growth will be easier if population growth becomes slower in the meantime. But it would be wrong to suppose that the problem of undernutrition and protein malnutrition will have been solved, because food supply is very unevenly distributed, with a coefficient of variation for calorie intake very much higher than that for requirement. The point is

brought out in table 10. It will be seen that, if the coefficient of variation of calorie intake remains unchanged at the existing level, and if the intake is assumed to be normally distributed, some 20 per cent of the people will still be living on intakes inadequate for health, even if the supply **per capita** became equal to the average requirement. In all probability the incidence will be higher, since the distribution of intake will be skewed, with a marked truncation at the lower end. It is of course likely that, as the supply **per capita** moves close to the average requirement, the coefficient of variation may decrease. On the other hand, with the rich pressing for dietary variety, there is also a likelihood that the supply target in terms of cereals to meet the energy needs may get increasingly restructured to meet the demand for expensive foods and, therefore, may prove inadequate to reduce inequalities in the intake distribution and hence in improving the intake level of the undernourished. As table 10 shows, with the constraint on supply removed, the primary issue for the 1970s before the countries is one of reducing the inequalities in energy intakes rather than one of increasing supply **per capita**.

Inadequate income, more than any other factor, is the primary cause of inadequate diet and hence of undernutrition. It follows that, unless a determined effort is made to generate additional income among the undernourished to pay for adequate diet, the problem of reducing inequalities may well prove intractable. Not that the national income has not increased all these years, but the increase has been insufficiently shared by the poorer sections of the population as, for example, Dandekar and Rath have shown in their study for India. (14) Their calculations show that it will take decades for the poor people to have sufficient purchasing power to meet their energy and nutrition needs if we depend upon the present growth in trends of national income and the present patterns of expenditure.

With land already a scarce factor and population growth showing no perceptible signs of decline, dependence on the present pattern of economic growth is clearly fraught with danger. A quicker solution must be found to generate additional income for the poor so as to make their demand for food effective. As Joy puts it, the problem before the countries is to find means of generating growth in a way that produces income among the poor sufficient for them to buy an adequate diet. (15) Hard as the task is, it is at least technically more feasible now than it was before the agricultural break-through, although a social solution to the problem has yet to be found. Clearly, as a first step, countries must involve the poor as rapidly as they can in the effort of food and animal production and associated cottage and village industries as a means of making the increase in production available to all sections of the people.

Happily, the new technology is as suited for adoption by a small farmer with his pair of bullocks as it is for larger farms, but, to enlist the small farmer into the necessary social effort to bring this about, appropriate policy measures and institutional changes, such as land reforms, credit and market facilities, will be needed as much as the adequate and timely supplies of the essential inputs. In other words, the programmes adopted for promoting high-yielding varieties must be far-reaching to ensure that the less privileged can benefit equally from the technological break-through in agriculture. Failing this, the differences in income between rich and poor will almost certainly

increase. At the same time, it is important to start rural works programmes for the development of water resources and to intensify agricultural research with the object of diversifying the basis of the "green revolution", so as to have high-yielding varieties not only of foodgrain crops but of other crops which can be grown under all conditions: irrigated, rainfed and dry.

Delay in reorienting the high-yielding varieties programme to enlist the participation of the small farmers can have adverse effects on the incidence of undernutrition and malnutrition, because such delay could increase the incomes of those readily able to adopt the new varieties, could depress prices as the level of supply for any given demand is increased, and could conceivably give rise to a situation where, if small farmers are late in adopting the new varieties, they may well have to sell more produce at lower prices, thus getting both less to eat and lower cash incomes. Possibly, too, they would be able to invest less in the new technology in the long run.

Mention should be made here of the role of special nutritional programmes, such as meals for school children, as a help in reducing inequalities in intake, at least until such time as success has been achieved in generating adequate income among the poor. A review of such programmes, however, shows that they have achieved little in the past, and, in any case, it appears inconsistent that many of these programmes should be directed to school children who are over three years old, evidently because of ease in reaching them, when the primary need is the feeding of post-weaning children. If there is a case for a feeding programme in the name of nutrition, it is one for pregnant and lactating mothers. Available evidence shows that a programme for supplementary feeding of pregnant women during the last three months of pregnancy can lead to a significant reduction in the incidence of premature babies and, through this, to a reduction in infant mortality. Likewise, experimental studies have shown that feeding lactating mothers can help a great deal in prolonging lactation and thereby reducing the risk of morbidity and mortality during the first year of an infant's life. This is also the most opportune period in the life of a mother to motivate her into achieving a smaller family norm. The contention is that if the chances of an infant's survival can be appreciably improved through better feeding of pregnant and lactating mothers, the mother may be induced to make a sustained effort at family planning and thus contribute towards improving the nutritional levels of herself and her children.

More attention needs to be paid also to the content of the foods offered for such nutrition programmes. A case in point is provided by the lysine-fortified modern bread, whose manufacture on so large a scale is justified mainly on the ground of augmenting protein supply. It can only be repeated that the food problem is not a problem of inadequate protein supply as is commonly believed. The protein deficiency that is found is largely the indirect result of an inadequate energy intake, so that supplementing diets with protein, whether by fortification or other methods, seems wasteful. To do so would amount to a costly and inefficient method of improving diets to meet the total energy and protein needs. It follows that the policies and plans to combat protein malnutrition which take as a first reference point for attack the existing inequalities in protein consumption must clearly give way to policies and plans to combat inequalities in the quantity of diet. And, since the quantity of diet is primarily determined by

the level of income, these policies and programmes must aim at eliminating inequalities in the income itself, at least to enable the poor to have the minimum income to afford the cereal or pulse-based diet adequate to meet their energy needs.

It is against this background that the role of population in the achievement of nutritional goals must be viewed. The task of generating income among the poor will become harder and harder if the family planning programmes under way fail to make faster gains. With the current rate of population growth, the absolute numbers of the undernourished and malnourished is likely to increase, even if **per capita** food supply reached and remained at the average need, thereby aggravating social unrest which today appears to inhibit the full exploitation of the potential revealed by the technical break-through. Never before in the history of the countries has it been more imperative and urgent than now to influence fertility trends fast enough if the opportunity of the "green revolution" is not to be lost to enlist the small farmer and those associated with him into the social and economic effort. On the other hand, it is precisely because the "green revolution" is known to have an immense potential for feeding the people that there is a tendency to look upon the population problem as less urgent than it was during the mid-1960s. If this impression gains a hold and if, as a consequence, the opportunity of the present break-through in generating effective demand among the poor should be lost, even in part, the opportunity of reorienting the family planning programmes to make them more effective will probably also be lost. For as long as the poor remain undernourished and malnourished for want of income, it is unlikely that they can be sufficiently motivated into the family planning as a way of life. It would appear to be a vicious circle, but one which has an important lesson for a better understanding of the population problem.

Far too often, the lack of adequate response from the people, as judged by the change in fertility, is blamed on the lack of adequate resources and effective channels to deliver family planning services. The fact, however, appears to be that, even where a family planning programme is widespread and well staffed and supported by information, education, free or subsidized supplies of contraceptives, incentives and appropriate social measures, the response from the rural poor has not been too encouraging. It is probable that too much is being attempted with available resources or that expectations are pitched too high. However, even where the programmes are relatively old, as in India, it would appear that, leaving aside cases reached by sterilization which involve only one-time consent, the programmes can hardly be said to have succeeded in influencing the married couples to the point at which family limitation begins to take hold as a way of life. To the rural people, an appreciable proportion of whom is undernourished and malnourished, the motivation offered by the programme is apparently not powerful enough to influence their way of life at their level of living. One is tempted to conclude, as Mitra (1972) does, that it is poverty which causes a high birth rate and that family planning programmes will need to go hand in hand with measures to eradicate poverty if quicker progress is to be made. Poverty cannot be got round by substituting modern techniques or contraceptives for motivation.

As already, pointed out, the "green revolution" offers a unique opportunity

for achieving this task and, through it, for achieving nutritional goals, but it will need to be looked upon in a more enlightened way in taking it to the farmer. The "green revolution" is not a package programme. Nevertheless, as Dandekar puts it, a notion persists that the results of the "green revolution" are available in packages of improved seeds, fertilizers, pesticides, and the like ready for application. All that is needed according to this concept is smart salesmanship backed by credit. (16) Much the same can be said about family planning programmes; that a notion persists that all that is needed to promote these programmes is smart salesmanship by medical or paramedical services backed by supplies of a variety of contraceptives, free or at reasonable prices, and appropriate incentives. This kind of sales promotion approach is unlikely to produce the desired results either in enlisting the small farmers into the effort to improving agricultural production or in limiting family size. What is really necessary for the "green revolution" to make an impact on the level of living of the farmers and all those associated with them in rural areas, and for family planning to gain hold as a way of life, is their intelligent appreciation of the changes which they are called upon to introduce in their work and their family life, which the technical progress has now made it possible for them to make with appropriate policies and programmes. Only in this way can conditions be prepared for hastening the achievement of nutritional goals.

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Table 1. Current levels of diet (per head per day at retail level)

Item	Less developed countries <u>a/</u>	Developed countries <u>b/</u>	Asia and the Far East
Calorie supplies	2,190	3,090	2,080
Calorie requirement <u>c/</u>	2,280	2,560	2,220
Supplies as a percentage of requirement	96	120	94
Total protein (grammes)	56	91	52
Animal protein (grammes)	11	49	8
Protein requirement <u>c/</u> (grammes)	29	30	28
Supplies as a percentage requirement	193	303	185
Fats (grammes)	35	121	24

a/ Far East (excluding China), Near East, Africa, Latin America.

b/ Europe (including USSR), North America, Oceania.

c/ The term average requirement, m , has been used throughout this paper and not the recommended allowance, $m + 2s$, regardless of whether calories or protein are being discussed.

Table 2. Index number of food supplies per caput
(price weighted; pre-war = 100)

Type of countries	1957-1959	1964-1966
Less developed	102	103
Developed	118	124
World	105	107

Table 3. A. Daily per caput calories and protein supply by expenditure level,
Maharashtra State, India, 1958

Expenditure, in rupees per month:	0-8	8-11	11-13	13-18	18-24	24-34	34	Average
Total calories	1,120	1,560	1,850	2,190	2,440	2,530	3,340 ^{a/}	2,100
Total proteins (grammes)	30.7	45.0	52.8	60.4	66.3	71.7	85.7	59.7
Animal proteins (grammes)	1.0	1.8	2.3	2.9	6.1	7.1	11.9	4.5
Number of households	76	114	87	82	102	63	349	893

^{a/} This value appears unduly high. It is stated that this is due partly to the exclusion from the household size of guests and labourers taking meals.

Table 3.B. Daily per caput calories and protein supply by expenditure level,
Indonesia (Java-Madura) 1963/64

Expenditure, in rupees per month:	Less than 6,000	6,001-10,000	10,001-16,000	16,001-30,000	30,001 and over	Average
Total calories	1,100	1,350	1,600	1,900	1,800	1,600
Total proteins (grammes)	18	23	29	36	37	29
Animal proteins (grammes)	3	4	7	9	14	7
Number of households	3,105	3,981	3,886	2,787	911	14,670

Table 4. Per caput calorie and protein supplies, by level of disposable income, United States, 1965

Income in US dollars per	Less than \$3,000	\$3,000-\$4,999	\$5,000-\$6,999	\$7,000-\$9,999	\$10,000 and over	All households
Calories	3,110	3,180	3,210	3,280	3,300	3,210
Proteins	98.1	102.4	106.7	109.5	112.9	105.8

Table 5. Estimated protein loss by an adult taking a diet restricted in protein or calories, or both (grammes per day)

Protein (grammes per day)	900	1,600	2,200	2,800
0	45	42	40	40
20	30	23	21	20
40	30	12	0	0
60	30	12	0	0

Table 6. Percentage incidence of protein and calorie deficiency
in Madras and Bihar (India)

Item	Protein deficient	Not protein deficient	Subtotal
<u>Madras, based on 1,022 households</u>			
Calorie deficient	28 (4.8)	21 (6.8)	49
Not calorie deficient	6 (4.0)	45 (5.6)	51
Subtotal	34	66	100
<u>Bihar, based on 2,474 households</u>			
Calorie deficient	5 (6.0)	12 (7.6)	17
Not calorie deficient	- (4.4)	83 (6.8)	83
Subtotal	5	95	100

Notes: Figures in parenthesis represent percentage protein calorie concentration (NDp Cal %).

Table 7. A. Index number of total and per capita food production (1952-1956 = 100)

Area	Total production			<u>Per capita</u> production		
	1958-1960	1963-1965	1968-1970	1958-1960	1963-1965	1968-1970
Less developed countries (excluding China)	117	134	154	104	106	107
Asia and Far East	118	134	156	106	107	110
Developed countries	117	130	151	110	115	126
World	117	132	153	106	108	112

Table 7. B. Annual percentage rates of increase (compound) in total and per capita food production

Area	Total production			<u>Per capita</u> production		
	1954-1959	1959-1964	1964-1969	1954-1959	1959-1964	1964-1969
Less developed countries (excluding China)	3.2	2.8	2.8	0.8	0.4	0.2
Asia and Far East	3.4	2.6	3.1	1.2	0.2	0.6
Developed countries	3.2	2.2	3.1	2.0	0.9	1.9
World	3.2	2.5	3.0	1.2	0.4	0.7

Table 8. A. Changes in production, area and average yield per hectare of nine major food crops a/ (percentage)

Area	Production		Area		Yield	
Less developed countries	86	(3.3)	44	(2.0)	30	(1.4)
Developed countries	37	(1.7)	-6	(-0.3)	45	(2.0)
World	53	(2.3)	18	(0.9)	29	(1.4)

Note: Average 1968-1970. (Annual % rates of increase (compound) are given in parenthesis. Average 1948-1952 = 100).
a/ Wheat, rye, barley, oats, maize, rice, potatoes, groundnuts and soyabeans.

Table 8. B. Index numbers of cattle numbers, a/ cattle products, b/ output and yield b/

Area	Cattle numbers		Yield		Output	
	Index	Percentage	Index	Percentage	Index	Percentage
Less developed countries	138	(1.7)	114	(0.7	156	(2.4)
Developed countries	141	(1.8)	126	(1.2)	177	(3.1)
World	139	(1.7)	123	(1.1)	171	(2.9)

Note: Average 1968-1970 (Annual % rates of increase (compound) are given in parenthesis; average 1948-1952 = 100).
a/ Including buffaloes and buffalo products.
b/ Meat and milk in terms of milk equivalent, taking one unit of meat as equal to 10 units of milk.

Table 9. A. Trends in available food supplies, calories and proteins per capita during the last decade

Area	Energy		Proteins		Animal proteins	
	1962	1965 1970	1962	1965 1970	1962	1965 1970
Less developed countries	2,080	2,120 2,190	55.2	54.7 56.4	10.4	11.0 11.4
Asia and Far East (excluding China)	1,990	1,980 2,080	51.2	49.4 51.7	6.9	7.6 7.9
Developed countries	3,010	3,090 3,150	86.4	90.7 92.2	43.1	46.9 50.9
World	2,450	2,510 2,580	68.0	68.7 70.7	23.4	25.3 27.2

Table 9. B. Annual percentage rate of increase (compound) in per capita energy and protein supplies

Area	Energy		Proteins		Animal proteins	
	1962-1965	1965-1970	1962-1965	1965-1970	1962-1965	1965-1970
Less developed countries	0.6	0.7	-0.3	0.6	1.9	0.7
Asia and Far East (excluding China)	0.0	0.9	-1.2	1.0	3.3	0.8
Developed countries	0.9	0.4	1.3	0.5	2.9	1.7
World	0.7	0.5	0.5	0.6	2.6	1.5

Table 10. Predicted prevalence of undernutrition for different levels of calorie availability per capita relative to requirement and coefficient of variation

Calorie availability per caput/requirement	Percentage coefficient of variation				
	8	16	24	32	40
85	14	27	34	38	42
95	1	12	21	27	31
100	-	7	16	21	27
105	-	4	12	18	24
115	-	-	5	12	16

THE EMERGENCE OF NEW TECHNOLOGIES AND INDUSTRIES AND THEIR IMPACT ON MANPOWER AND EMPLOYMENT*

by

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The experience of several developed countries has shown that the introduction of new technologies is one of the principal factors in promoting economic development. Nevertheless, the developing countries should consider this role with caution, choosing only those technologies which can best help to achieve the targets set.

The technologies of the developed countries, being labour-saving, are effective in an economy where there is a shortage of labour and improved productivity is a primary consideration.

In terms of **per capita** national income, economic growth in the developing countries has been retarded, largely on account of the rapid population increase. During the First United Nations Development Decade their average rate of increase of gross national product (GNP) was 5.5 per cent per annum. With an average rate of population increase of 2.5 per cent per annum, the average rate of increase of **per capita** national product was 3 per cent. On the other hand, for the developed countries, the rate of growth of GNP was 4.8 per cent; of population growth, 1.1 per cent. Consequently, the average rate of increase of **per capita** GNP was 3.7 per cent per annum.

The biggest problem for developing countries today and in the foreseeable future is that of the "labour force explosion". Quite contrary to the need in developed countries to raise productive capacity, developing countries must adopt effective measures to give adequate jobs to the yearly increasing numbers of entrants into the labour force as well as to vast numbers of entrants into the labour force as well as to vast numbers of unemployed and underemployed. These countries need labour-using technologies, rather than the new, labour-saving technologies that have been and will continue to be developed in economically advanced countries. It is for this reason that in the development plans of many developing countries, there has been a shift of emphasis from industrialization to agriculture.

Several problems, including the population and labour force explosions and excessive urbanization, require that the introduction of technologies be considered from a broad point of view.

* The opinions expressed in this paper are the author's own and do not necessarily reflect the views of his organization or those of the ECAFE secretariat or of the United Nations.

The population and labour force explosions

The population explosion has been going on for two decades but its effects are only beginning to appear as a labour force explosion. Cohorts born after the Second World War are entering into the productive age with few losses due to deaths. It is estimated that the labour force of the developing countries as a whole will have increased by about 23 per cent between 1970 and 1980 ^{1/} with a particularly high rate of increase in Asia (about 2 or 3 per cent).

Prof. Oshima uses an index, "income-employment growth coefficient" (ratio of growth rate of real national income to that of employment), to show the inter-relationship of rate of labour force increase and rate of growth of national output necessary to absorb the incremental labour force ^{2/} While the coefficient may vary from country by country, its average value for Asian developing countries is estimated to be 3 per cent. Thus real national income needs to grow at 7.5 or 9 per cent if the labour force increases by 2.5 or 3 per cent per annum respectively.

Even such a high rate of growth of national income is not sufficient, if the unemployed and underemployed are to be given more and better jobs. The fragmentary information available suggests that unemployment and under-employment rates in developing countries are very high ^{3/}.

While a few Asian countries have already attained a fairly high rate of economic growth, many others are still facing difficulties in attaining a sufficient rate. This means that the region's situation will be worsened by the labour force explosion unless effective employment policies are introduced.

If it is very difficult to promote economic growth at such a rate because of such reasons as capital shortage, the limitations of the domestic market or unfavourable conditions in the oversea market, the only recourse for developing countries is to the creation of job opportunities by means of (a) an appropriate industrial structure effectively absorbing additional labour force and (b) labour-intensive methods of production. In terms of the above-mentioned income-employment growth coefficient, efforts should be taken to reduce this to a reasonable level. If it is reduced from 3 to 2 per cent, the needed rate of economic growth to absorb the increasing labour force at 2.5 per cent per annum will be not 7.5 but 5 per cent per annum. Even if the rate of labour force increase is 3 per cent per annum, the rate of economic growth of 7.5 per cent will be sufficient.

In this connexion two salient points should be stressed. Firstly, the employment-oriented policies involving reduction of the income-employment growth coefficient need not necessarily contradict the output-oriented policies. The creation of job opportunities for the unemployed and underemployed leads to an

^{1/} *World Comprehensive Demographic Projections, 1965-1985* (United Nations Secretariat: internal working paper)

^{2/} Harry T. Oshima, "Growth and unemployment in post war Asia" *The Structure and Development in Asian Economies*. (Japan Economic Research Centre).

^{3/} D. Turnham, *The Employment Problem in Less Developed Countries, A Review of Evidence*, (OECD, 1970), p. 76.

increase of national output if their marginal productivity is not zero or negative. Secondly, reducing the income-employment growth coefficient implies the adoption of labour-using technologies and methods of production. This should be realized from the viewpoint of the national economy as a whole. It should not be understood that the coefficient in each sector is reduced by the same proportion. This point calls for discussion of the highly complex problem of choosing an appropriate industrial structure.

Industrial structure in developing countries

The labour force's industrial structure is often used as an index of economic development. The classification of primary, secondary and tertiary industries defined by Prof. Colin Clark is classic. The proportion of agricultural workers offers a particularly sensitive reflection of the level of economic development.

According to a document issued by the ESCAP secretariat, almost all countries in the region have a substantial majority of workers in agriculture, the only exceptions being Japan, Hong Kong and Singapore.^{4/} Among the remainder of countries for which data are given, the shares of the agricultural sector ranged, in the 1956-1966 cross-section, from 46.2 per cent in Iran (1966) to 93.8 per cent in Nepal (1961). Not only is the proportion of agricultural workers very high, it does not change so much in most developing countries. The absolute number of workers in agriculture even increases.

On the other hand, most workers in the non-agricultural sector are in "traditional" industries, such as textiles, trade and personal services. It is also reported that there are a large number of unemployed and under-employed in both rural and urban areas. The rate of unemployment is higher in the urban centres than in rural areas. Hence the important role of traditional sectors in absorbing labour force additions in developing countries today should be recognized. Likewise, it must be stressed that the dominant fields of labour force absorption in the near future are going to be the traditional sectors, both agricultural and non-agricultural.

The "modern industries", using capital-intensive methods of production, do not absorb labour force entrants directly. Very often those established in developing economies do not have the capacity to generate sufficient employment opportunities, unless related and supporting industries are extensively created.

In the case of Japan, the whole modernization process on the rate of labour force increase as compared with that in developing countries today was low. Nevertheless, the proportion of agricultural labour force in the total labour force remained fairly high, over 50 per cent, till after the Second World War. Also, the absolute number of agricultural workers was kept at the same level; hence it did not start to decline until the 1960s, after the initiation of a "high economic growth policy".

^{4/} *Manpower Demography of Countries in Asia and the Far East*, December 1970, (POP/IPMP/5) p. 51, table 6.

The conditions which existed at the beginning of the Japanese modernization 100 years ago were: (a) a large population (some 35 million), and (b) a narrow land area. Population density was high (about 90 km²) and agriculture was the dominant industry, employing over 80 per cent of the labour force. At that time, both fertility and mortality were high (over 30 per thousand population). As a consequence, the rate of population increase was as low as under one per cent per annum. Such demographic conditions were favourable to the growth of the national economy.

The Government was able to establish modern factories using advanced, imported technologies and continued to operate them till they could be transferred to private management. These factories came to constitute Japan's leading industries, along with the emergence of small-scale related factories. Thus it was the Government which took the initiative to establish modern factories and to introduce advanced technologies, at the same time providing the funds for their development. This marked the introduction of the land tax system, the aim of which was to transfer to industries capital accumulated in agriculture.

The role played by the agricultural sector was very important: it contributed to industry its accumulated funds and its incremental labour force and, by ensuring a sufficient supply of food, it helped to maintain the wage rate in the industrial sectors at a reasonably low level.

The industrial structure created at the beginning of Japan's modernization and maintained until very recently might be called a "well-organized dual structure", with its complementary relationship of modern industrial sectors and traditional sectors. A dual structure that is well-organized differs from that often appearing in developing countries, where there exists, on the one hand, a highly developed modern sector employing imported technology and capital-intensive methods of production and well-trained technicians and skilled workers at high salaries and wages; and, on the other hand, a traditional sector where primitive technology and labour-intensive methods of production are used and productivity and wages are naturally very low. While the two sectors are separate they have a complementary interrelationship. The modern sector produces goods which are mainly for export owing to an insufficient demand for them on the domestic market. Workers in the modern sector obtain relatively high salaries and wages and their consumption expenditure is directed towards high-calibre goods which do not necessarily correspond to the level of development of the national economy. The traditional sector suffers from a poor domestic market for its product. Labour force, productivity and income are low and there is much unemployment and underemployment.

Experience in developing countries today would appear to show that employment-generation effects of industrial development through multiplier effects are not necessarily large. But it has been seen from the foregoing description that whether employment-generation effects are large or not depends mainly on the complementary relationship of industries. The major policy effort of the national economy should be directed towards creating a well-organized industrial structure.

Characteristics of unemployment and underemployment in developing countries

Before the emergence of the labour force explosion problem, unemployment and underemployment were among the major topics of discussion in developing economies. When industrialization became the main target, however, the shortage of skilled workers was considered more important, and emphasis was put on training. The situation in the region has been changing recently, as unemployment shifts from the unskilled and semi-skilled to the educated and trained workers, showing the following characteristics:^{5/}

(a) rates of unemployment are generally higher in urban areas than in rural areas;

(b) unemployment affects largely the younger age group, 15-20 years of age;

(c) rates of unemployment are seen to vary with the level of education attainment, the lowest of which comprises the illiterate. They rise gradually, starting at the primary-level education and reaching their peak among those who have completed secondary education.

These three characteristics are closely interrelated, and the pattern may be attributed to an educational system modelled after that of the developed countries: too much emphasis on general education, resulting in an overeducation unsuited to the economic evolution of the developing countries. It is natural that educated people should migrate to urban centres in preference to the rural areas, but, for want of satisfactory job opportunities, they became unemployed. This denotes much wastage of valuable manpower which could have been between utilized for economic and social development. Another important point to be noted is that open unemployment of educated people is much more dangerous as an origin of social and political unrest, than underemployment in rural areas.

Internal migration from rural to urban areas

Internationally comparable definitions of "urban" and "rural" are wanting, and current statistics of urban and rural population and migration are inadequate, although it is generally believed that the urban population has been increasing very fast, not only in the developed, but also in the developing, countries. According to United Nations estimates, this tendency will continue. ^{6/} For example, during 1960-1970, the growth of urban population was 2 per cent in the more developed countries and 4.5 per cent in the less developed. On the other hand, the annual rates of rural population growth were 0.6 and 1.8 per cent respectively. Similar values are anticipated for future period. The big gap between the urban and the rural rates is apparently due to internal migration from rural to urban areas.

Reasons other than overeducation for the high rate of migration in developing countries in recent years are:

^{5/} S.P. Agarwal, "Interrelationship between population and manpower problems in the context of socio-economic development of the ECAFE region," *Interrelation between Population and Manpower Problems*, (E/CN.11/1015), pp. 112-123.

^{6/} *World Comprehensive Demographic Projections, 1965-1985*, op. cit, p. 10, table 4.

(a) the income differentials between urban and rural areas are generally very large. It is said that the typical unskilled urban labourer receives an income two or three times as high in real terms as his counterpart in traditional agriculture.

7/ These differentials are "too large", being bigger than needed to induce the flow of labour required in the urban economy;

(b) family ties strong enough, even in urban areas, to support the unemployed within the family;

(c) educated persons are attracted to urban areas also by factors other than higher urban income;

(d) the negative influence of a high unemployment rate on migration appears only with some time-lag.

These factors cause excess urban-rural migration, resulting in high rates of urban unemployment and a drain of able persons from rural areas. Rural-urban migration will therefore continue for some time to come.

On the other hand, it has been argued that the following factors will cause migration to slow down. Firstly, the average urban wage level will decline as the number of unemployed increase in urban areas. Secondly, a continuing high rate of urban unemployment will result in a vanishing of expectations over time of urban areas. Thirdly, as the proportion of educated unemployed increases so will social acceptance of rural employment for educated people follow. Consequently, except in those parts of the developing world where "push" factors have been or will become dominant in inducing rural-urban migration, the relative attractiveness of urban employment may decline, and probably fairly soon.8/

Development of agriculture, technology and employment

There is an imbalance between the supply of labour and demand. Agriculture and other traditional sectors are dominant in the national economy. Excessive urbanization results in open unemployment. These facts point to a need to examine the role of agriculture and other traditional sector vis-a-vis modern industries. Because agriculture supplies food and capital and offers employment opportunities, much effort should be placed on its development. Investigations to find appropriate technologies and investment programmes in agriculture are needed.

Agricultural production depends much more than industrial production on natural conditions, such as the nature of the soil and the climate. Because natural conditions vary from country to country and region to region, it is impossible to generalize about agricultural technologies and development planning. But experience in some countries of the region will serve in considering the problems of the others. The experience of the Philippines is cited for this purpose.

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7/ Elliot J. Berg, "Wages and employment in less developed countries, *The Challenge of Unemployment to Development and the Role of Training and Research Institutes in Development*," (OECD, 1971), p. 111.

8/ Elliot J. Berg, *op. cit.*, p. 115.

9/ Cristina M. Crisostomo et al., "The new rice technology and labour absorption in Philippine agriculture," paper presented to the Conference on Manpower Problems in East and Southeast Asia, May 1971.

In 1966, high-yielding rice varieties were first introduced in the Philippines, subsequently spreading over one-third of the more than 3 million hectares of rice. During the first five years, the growth rate of rice production rose to 3.8 per cent per annum, compared with 2.4 per cent for the previous six years. This increase must be due partly to high productivity, but most of it is believed to be caused by a high rate of labour absorption. Thus it may be concluded that the introduction of the new varieties of rice can help to increase labour absorptive power in the rice sector. Unfortunately, there seems to be a limit to the labour absorptive capacity of the rice sector because labour productivity resulting from new technology will rise, limiting the rice market both at home and abroad.

Another means to further development is to increase multiple cropping. A recent study in the Philippines showed that the labour input rose as the index of multiple cropping increased, and it was concluded that there are a number of factors which interact to determine cropping patterns and levels of labour use. More labour can be absorbed through multiple cropping, but the key to expansion of multiple cropping is the development of the irrigation system. At the same time the most profitable employment of labour in multiple cropping will require greater inputs of both fixed and operating capital on the farm.

Thus far in this paper the role of agriculture has been considered in the light of current development problems in developing countries. In conclusion, some points will be added from the point of view of long-range economic development.

Particularly for countries with unfavourable resource endowments, like Japan, there is a limit to the development of resource-extracting industries such as agriculture. At a certain stage of the national economy's development, switching from these industries to resource-processing industries is necessary in order that the country might import food and raw materials. A crucial point to determine is the stage of development at which the switching should occur.

On this point Professors Fei and Ranis propose a useful guideline based upon their "two-stage thesis."^{10/} They propose that agricultural modernization should be promoted at the first stage, where diminishing returns have not yet become serious. At the second stage, after potential gains from agricultural modernization have been exhausted, labour-intensive industries and service industries should be developed to export their product. Perhaps a third stage might be added: where shortage of labour has become very serious, capital-intensive industries should be dominant in the national economy.

Japan passed from the first stage to the second in 1890, when it began importing food; and from the second stage to the third in the mid-1960s. Before that, its major export products, such as toys and other miscellaneous goods produced mainly in small, often home-based industries, were labour-intensive.

Some remarks on policy measures

The following considerations are particularly important in the formulation of manpower and employment policies in the ESCAP developing countries:

^{10/} John C.H. Fei and Gustar Ranis, "Development and employment in the open dualistic economy," paper presented to the Conference on Manpower Problems in East and Southeast Asia, May 1971.

(a) It should be recognized that the already large gap between supply and demand of labour force is growing, owing to the "labour force explosion". Thus the most urgently needed policies are those which will generate job opportunities to absorb the incremental labour force as well as the unemployed and underemployed.

(b) The importance of the role of traditional sectors, particularly that of agriculture, should be understood. These sectors should be considered as a dominant field for absorbing labour force increments and as suppliers of daily necessities, a shortage of which causes real wages to rise and reduces the labour-absorptive capacity of the industrial sectors.

(c) Investigations and experiments should be promoted on a large scale designed to find, select and develop the agricultural techniques and methods of cultivation most suited to each country's conditions.

(d) As a general rule, except in a few leading industries, labour-intensive methods of production should be adopted in industrial sectors. Developing countries should not necessarily import machines and technology devised for conditions in developed countries. They should try to develop appropriate machines and technology by themselves or import equipment designed especially for their type of country. In this connexion, an effort should be made by the developed countries to devise equipment suitable for the developing countries.

(e) It is desirable to introduce some regulation to maintain real wages at a reasonable level, in order to create more opportunities for the application of labour-intensive methods. Control of the urban wage level is the more important, to prevent unnecessary rural-urban migration.

(f) Some measures should be taken in developing countries against the so-called "demonstration effect". This is particularly important because it leads to an increase of unnecessary consumption and often to a wasteful spending of valuable foreign exchange.

(g) Judging from the fact that high unemployment rates are found among educated people, changes in the educational system would seem to be necessary. Re-evaluation of the implications of general education and recognition of the importance of vocational training are particularly urgent. Employment policies should be integrated in the educational system.

(h) It would be commendable if developed countries could regulate their exports and imports in such a way as to encourage the growth of infant industries in developing countries. Many developed countries have reasons to protect their own industries, but they should also give due consideration to the acute problems of the developing countries. In addition, co-ordination among developing countries in international trade policies is needed.

(i) International assistance from the developed countries to the developing should be expanded and intensified in various facets of development programmes. In the field of manpower and employment policies, there are several aspects of national programmes where international aid would be very useful. Much effort should be placed upon this important activity by United Nations agencies such as ECAFE and the ILO, in the developed and the developing countries alike.

TOPIC 4: SOCIAL ASPECTS OF THE DEVELOPMENT OF HUMAN RESOURCES

INVESTMENT IN SOCIAL DEVELOPMENT: SOME IMPLICATIONS OF DEMOGRAPHIC CONDITIONS*

by

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During the past fifteen years the usual approach to the relationship between population and social development has focused on the effects of population growth and structure on "investment requirements" — the amount of investment required annually to maintain or attain a given level of social capital *per capita*.^{1/} Using models of widely varying sophistication and complexity, economists have often demonstrated that population growth does have a large and positive effect on "investment requirements."

Demonstrations of this sort reflect the way in which the problem is formulated and, standing alone, are barren of any policy implications. Indeed policy implications emerge only after the population growth/investment mechanism is linked analytically to its economic context, usually by the assumptions that the level of social development is heavily dependent upon the level of social capital *per capita* and that where population grows quickly, the cost of preventing a relative decline in social capital *per capita* places a heavy economic burden on the developing country and may retard the process of development.

These two assumptions permit the now familiar conclusion to be reached that rapid population growth, by increasing the cost of social development, impedes the process of development. In this paper the assumption that social development depends heavily on social capital is reconsidered as part of a general review of the basic relationships among demographic conditions, social investment, and social development.

The paper specifically asks how demographic conditions — and especially the rate of population growth — affect both the role investment plays in social development and the allocation of resources among alternative social projects and programmes. Particular attention is given to the factors and problems that decision-makers and social planners must take into account in allocating social investment.

A necessary preliminary to analysis of these relationships is a brief review of some fundamental conceptual problems in defining and measuring "investment in social development" and "social development."

* The opinions expressed in this paper are the author's own and do not necessarily reflect the views of the ECAFE secretariat or of the United Nations.

^{1/} The terms "social capital" and "social development" are discussed above. In short, "social capital" refers to the stock of capital (physical and human) used to advance "social development."

Investment

The term investment has traditionally been used to refer to the formation of capital, physical or human, used to produce certain rather clearly identified goods or services. Over the past decade, however, it has become increasingly common to label as "investment" any expenditure expected to contribute eventually to economic development. This usage of the term reflects greater awareness of the potential contribution of social development to economic development and realisation that mere increases in the stock of capital are not the key to economic development.

The meaning of such phrases as "investment in health" and "investment in social development" depends on the interpretation of "investment." If the newer, broader definition of investment is adopted, "investment in health" means "outlays expected to increase economic productivity and output by improving the health of the population", and "investment in social development" means "outlays expected to increase economic productivity and output by improving the social welfare of the population." According to the traditional definition of investment — and this is the definition adopted here — "investment in health" means "capital formation to improve health" and "investment in social development" means "capital formation to advance social development."^{2/}

The traditional, more narrow concept of investment avoids the implication that the purpose of social development is to foster economic development and it is more pertinent to the specific problems that arise in the selection and implementation of projects and programmes. To planners and decision-makers responsible for specific programmes the traditional concept of investment, with its emphasis on rates of return to alternative projects, may be the more useful one.

Social development

Social development is often rather obliquely described as the non-economic aspects of development or as the social (i.e., non-economic) aspects of improvement in welfare. Such descriptions leave unanswered the question of how to distinguish between the social and the economic aspects of development (or welfare). In practice the delineation of what constitutes social development tends to be rather arbitrary, a reflection of the actual interdependence of economic and social factors in development and of the convention of presuming that much governmental economic activity contributes to social development. For instance, measures of the number of motor vehicles are often taken as indices of economic development, while measures of the complementary factor, kilometres of highways and secondary roads, are often considered indices of social development.

For the purposes of this paper social development is assumed to include, among other things, alleviation of household drudgery and misery (through, for example, the introduction of piped water, sanitary sewers, or electricity);

^{2/} Similarly, "investment in family planning" may mean "outlays expected to increase GNP or GNP *per capita*, or both, by reducing population growth" or "formation of capital needed to provide family planning services." The second meaning is preferred here.

improvements in health, education, and recreational and cultural opportunities; improved access to such modern comforts as television, rapid transport and dependable sources of heat; and gains in social security in the broadest sense, including greater opportunities for steady, satisfying employment and stronger community ties and involvement.

More formally, social development is here taken to be equivalent to improvements in social welfare due not to the consumption of more ordinary (private) economic goods and services but to the consumption of more "social goods and services." Such goods and services are produced with the aid of "social capital" formed by "social investment" (or "investment in social development"). To put it the other way around, "investment in social development" forms the "social capital" used in producing the "social goods and services" that increase social welfare.

This approach to social development and social investment is broader than the conventional approach, which focuses on public capital formation in the social sectors (especially education, health and housing), and it implies that public investment in the social sectors is not the only way to advance social development. In fact, over the past two decades many efforts have been made to increase the social benefits of investment, public and private, outside the social sectors. Merely illustrative of these efforts are restrictions regarding land use, product safety and durability, emission of pollutants, and the like; regulation of working conditions, especially with regard to safety, hours and holidays; incentives to invest in relatively backward regions or to produce socially useful products; subsidies to assist persons linked to industries threatened by competition or technological obsolescence; and measures to prevent the abuse of economic power by private organizations. More systematic and comprehensive efforts along these lines might well increase the contribution to social development of investments not motivated by social considerations.

The effects of investment on social development

Conceptual difficulties in analysing the role investment plays in social development extend beyond basic problems of definition to problems of identifying, measuring and comparing the effects of social investment.

A particularly intractable problem is that of determining, even approximately, the apparent or probable effects of specific investments on social development. While it is true that many "economic" investments fail to yield the expected gains in the output of economic goods, the presumption remains that within limits a certain increase in the production of a commodity can be obtained by a commensurate investment in plant, equipment, training, and the like (combined with the necessary inputs of labour and materials). Moreover, in determining the characteristics of the projects and programmes they intend to support, decision-makers are generally presumed to have some information about the consequences of the alternatives available.

In contrast, information concerning the effects on social development of various alternative social investments is available only infrequently. For example, the probable impact on health of additional investment in hospitals, schools, clinics, training of health personnel or other projects is rarely known, especially

where standards of sanitation, preventive medicine, and public health knowledge are low.

The consequences of this uncertainty, even ignorance, of the probable social effects of specific investments in social development are important:

1. In the first place it may be misleading to speak of "investment requirements" since they cannot be reliably deduced from or even linked to any "required" level of output of social goods and services (or level of social welfare). For example, it may not be reasonable to adopt as a social objective the attainment of given ratios of doctors and hospital beds per 1,000 patients or of classrooms per 1,000 children of school age.

2. A second consequence of ignorance of the probable effects of social investment is that it is tempting (and easy) to disregard the importance of choosing the most appropriate technology. In fact, consideration of alternative techniques for producing social goods and services seems on the whole to be casual and rather limited and the details of the design and implementation of social investment projects seem to receive relatively little attention, at least in comparison with those of economic investment projects. It is often noted, for instance, that although the organization and curriculum of secondary school education in many developing countries have till recently been largely based on nineteenth-century European practices, they have rarely been subjected to fundamental criticism and revision.

3. Ignorance of the probable effects of social investment may cause social investment to be measured in ways not closely related to its actual or intended effects. For instance, it is common to describe conventional plant and equipment in terms of daily output (number of cars assembled; barrels of oil refined; tons of steel produced) or in terms of capacity (kilowatts of power-generating capacity; ton-miles of transport). However, social capital is often described in terms of number of clinics or of hospital beds, number of classrooms, or number of doctors and nurses. Such information reveals little about the social impact of actual or proposed programmes and projects.

4. In the absence of better information about the effects of social investment the naive and unproven view that the level of social welfare depends primarily on the stock of social capital has persisted and it may in part account both for the use of measures of social capital (e.g., numbers of hospital beds and classrooms) as indices or surrogate measures of social welfare and for the tendency to emphasize the volume of social investment. The situation seems rather analogous to that prevailing in the 1950s, when great emphasis was placed on the level of "economic" investment and rather little on how effectively it could or would be used to advance economic development.

Demographic conditions and the allocation and impact of social investment

Even though maximization of GNP ordinarily is not, and should not be, the sole or predominant objective of national economic planning, it is the central focus of most methods of project appraisal; for in estimating project costs and benefits in terms of opportunity costs (the value of resources in the next best

use) these methods attempt in effect to determine a project's probable impact on aggregate output. It is easy, and commonplace, to denigrate such methods of project appraisal, but they do provide a fairly comprehensive way to compare the economic effects of alternative projects.

Such methods cannot, however, be used in allocating social investment, since there is no way to measure and compare the (non-economic) social benefits of the projects considered. Thus, in choosing between a hospital and a school or between a hospital and a group of clinics, social planners and decision-makers necessarily rely on their intuitive assessments of the feasibility and effects of alternative projects and on their own values or their perception of society's values.^{3/}

The discussion in this section presumes, nonetheless, that even though social investment policy is not based on explicit formulae and comparisons of the expected costs and benefits of alternative projects, it does respond in a rational manner to changes in economic, social or demographic conditions.^{4/} The discussion considers how demographic factors may affect the level and allocation of social investment as well as its impact on social development, looking first at the possible effects of demographic conditions on the inputs and technology used to produce social goods and services and then at the possible effects of demographic conditions on the consumption of social goods and services and, thereby, on the kinds and amount of social investment needed.^{5/} Emphasis is placed on the implications for social investment of the distribution among socio-economic groups of consumption of social goods and services.

The production of social goods and services

Although concern over the efficiency of social projects and programmes is not new, systematic efforts to evaluate and compare empirically alternative social investment projects are relatively novel in both the developed and the developing countries. This situation may account in part for the persistence of the thesis that social capital requirements are proportional to the size of the population served.

This thesis is analogous to the "capital-output ratio" approach to economic output that has long since been supplanted by more flexible, more comprehensive models of how economic goods and services are produced. Efforts to adopt and adapt features of these models in order to improve explanations of how social goods and services are produced are under way and should eventually be suc-

^{3/} Significantly the public's views regarding the desirability of social investment projects tend to be considered more attentively than its views regarding ordinary economic projects.

^{4/} An alternative point of view is that the level and the allocation of social investment are determined "subjectively" and either are not affected by demographic factors or are affected in unpredictable ways. Another equally inhibiting view is that social capital requirements are proportional to population size, aside from variations in age structure, and that the allocation of social investment among projects and sectors does not depend significantly on demographic factors.

^{5/} The discussion does not, however, presume to deduce the actual, specific impact of demographic conditions on the allocation of social investment or on the effects investment has on social development.

cessful. In the meantime, however, it would appear useful to try to analyse, within an admittedly limited framework, three ways in which demographic conditions may affect the production of social goods and services.

1. Economies of scale

The possibility that increases in population size would permit or engender economies of scale (i.e., reductions in unit costs) in the production of economic goods and services has been often, though inconclusively, discussed. Much would seem to depend on such varied factors as the current size and structure of population; trade relationships; the availability of complementary inputs, including land, natural resources, capital, and skilled labour; and the organizational and technological capacity to exploit any existing or potential economies of scale.

Economies of scale in the production of social goods and services seem potentially greater than those in the production of economic goods and services. In the first place, social goods and services are often consumed jointly rather than competitively; thus the benefits of a malaria eradication programme or of television broadcasting are not necessarily limited to a fixed number of persons.^{6/} Secondly, the production of social goods and services seems less dependent on natural resources than the production of economic goods and services, possibly because services account for a relatively larger share of social output than of economic output.

In practice, population growth may permit significant economies of scale to be realized through such practices as the sharing of administrative, training, and research costs of, say, health programmes; the use of larger, more efficient schools (made possible by more dense concentration of pupils); or the fuller utilization of recreational and transport facilities. But diseconomies of scale are possible too. The cost *per capita* of certain health measures may increase with population density, and the inefficiency of massive bureaucracies may actually drive up unit costs.

The implications of economies of scale for social investment policy are two fold. On the one hand, in allocating resources among sectors, decision-makers need to take account of differences among sectors in the extent of economies (or diseconomies) of scale. For instance, leaders may conclude that only modest increases in outlays for bridge construction, malaria eradication and recreational facilities are implied by rapid population growth, while outlays for education and curative medical services must expand at least as rapidly as population.^{7/}

^{6/} This hinges on the definition of social goods and services. If, for example, the existence of a bridge is a social good, economies of scale are essentially irrelevant. If the use of the bridge is a social service (and the bridge itself social capital), economies of scale will be important up to the point where the bridge becomes congested, as long as individuals wish to use the bridge and have the complementary resources, such as vehicles, to do so.

^{7/} There are reasons both for investing relatively more and for investing relatively less in a programme or project benefiting from substantial economies of scale. A larger investment is suggested by the relatively greater return obtained — the output of that programme is a “better buy.” On the other hand, a smaller investment is suggested by the increase in the amount of that good available relative to other goods.

On the other hand, social investment policy may seek to exploit economies of scale without depending on population growth and to minimize diseconomies of scale without depending on reductions in population growth. Such rather fundamental ways of reducing unit costs as increasing production and consumption *per capita*, administrative reforms, international co-operation, and technological and organizational innovations may be more efficient means of exploiting economies of scale (or minimizing diseconomies of scale) in the production of social goods and services than manipulation of population growth rates.

2. Innovation

A venerable argument in favour of population growth is that it may create the pressure needed to induce innovation, where innovation refers not only to technological advance but also to improvements in organization, institutions, legal systems and so on. This raises the attractive possibility that innovations in such areas as providing health services and education, coping with the needs of shanty-towns, and overcoming traditional barriers to rural development may avoid or reduce any conflict or inconsistency between rapid population growth and social development.

The specific hypothesis that rapid population growth will lead to innovations in social technology has the same shortcomings as the more general thesis. It is not clear why individuals or societies should respond more creatively to pressure due to population growth than to pressure due to economic or political developments or to higher levels of aspiration,^{8/} nor is it clear that rapid population growth has in fact stimulated innovation in specific countries. In sum, the suggestion that the technology used in producing social goods is not immutable is important; but the policy implication to be drawn is more nearly that continued efforts to promote innovation in social development are needed than that population growth can or might induce innovations that tend to compensate for the pressures or needs it creates.

3. Changes in the mix of inputs

Even in the absence of technological advance, changes in the relative prices of inputs may call for or even induce changes in the mix of inputs used in producing social goods. For instance, if the supply of secondary school teachers expands, reducing relatively the value of a secondary school teacher, it may be sensible for education planners and administrators to increase the ratios of such teachers to other personnel, to classrooms, to pupils, and so on.

It is difficult to foresee the possible effects of the rate of population growth on the relative prices of the various inputs used to produce social goods and services. In any case, the extent to which one input can be substituted for another is difficult to determine. Still, relatively slow rates of population growth may in the long run increase the price of labour relative to capital and call for relatively capital-intensive projects and programmes. Alternatively, where substantial increases in labour force and unemployment are expected, the development of

^{8/} The thesis that people respond more creatively and vigorously to population pressures than to changes in levels of aspiration seems somewhat inconsistent with the conventional humanist point of view.

labour-intensive social investment projects may be desirable. In practice this may mean relatively rapid expansion of labour-intensive programme components; the development of a fairly large network of paramedical personnel dependent upon a set of relatively small clinics may for instance take precedence to the development of large, well-equipped hospitals.

The consumption of social goods and services

That population growth tends to increase the desired and actual level of consumption of social goods and services is rather obvious and often noted. It is less frequently remarked that the relative increases in consumption are not likely to be the same for all social goods and services. In part this is due to the production relationships discussed above: if, for instance, a 10 per cent increase in secondary school enrolment will increase costs relatively more than a 10 per cent increase in primary school enrolment (owing, say, to a shortage of secondary school teachers), decision-makers may choose to increase primary school enrolment relatively more than secondary school enrolment.

Different rates of increase in the consumption of various social goods and services may result from the structure of tastes or priorities. For instance, leaders may be committed to achieving universal primary education at the earliest possible date. In this case, the greater the rate of population growth — and the younger the population — the greater is the share of social investment that must be allocated to primary education, regardless of possible declines, absolute and relative, in standards and in investment in other social programmes and projects.^{9/} Similarly, rapid population growth might lead decision-makers to increase the proportion of investment in health that is intended to promote preventive, as distinct from curative, medical services.

In sum, demographic conditions affect the alternatives open to social planners and, thereby, the choice of the mix of social goods and services to be produced. Since not all social goods and services are produced with the same mix of inputs, that choice affects not only the allocation of social investment but also aggregate investment requirements. At the same time that choice reflects limitations on the resources available for investment and the expected results of alternative allocations of social investment.

The question of what social goods and services are consumed is closely related to the more important question of who consumes them; indeed, an assessment of the needs for or effectiveness of social investment depends in good measure on who is to benefit. Yet it is often forgotten, or overlooked, that not everyone benefits equally from social investment projects. Ordinarily a project provides relatively greater benefits to a group of persons differentiated from the rest of the population by their socio-economic characteristics, including place and region of residence, occupation, education, income and social class. Unless the costs of social investment projects are distributed in the same way as the benefits, the net effect of such projects is to redistribute income and welfare — i.e., to transfer it from one group to another.

^{9/} The argument and conclusion would be very much the same whenever or wherever goals are established in terms of a proportion of the population or in *per capita* terms.

To the extent that rapid population growth reduces or limits the contribution that social investment projects make towards reducing inequality, the argument for public support of family planning programmes gains in strength.^{10/} However, the impact of rapid population growth (and the associated demographic conditions) on the redistributive effects of social investment projects depends on the characteristics of the projects themselves, and a simple generalization is not possible. Nonetheless, several implications of demographic conditions for the redistributive effects of social investment seem significant.

In the first place, increases in the number of persons belonging to especially impoverished or otherwise disadvantaged groups, such as inhabitants of shantytowns and landless agricultural labourers, may be accelerated by rapid population growth, both because such groups represent a sort of demographic residual and because fertility tends to be high among families which cannot ensure the economic self-sufficiency of their children. National leaders may be anxious, for political as well as social reasons, to alleviate the misery of such groups, but may find the cost of the needed social investments to be prohibitive.

A second, more general problem — that of trying to cope with increases in population that are relatively greater than the increases in resources available for social investment — is distinct from the problem of accelerated growth of particularly disadvantaged groups. A squeeze on funds due to population growth may oblige or tempt planners or decision-makers to sacrifice some gains in equity if, as is often assumed, the pursuit of distributional objectives adds to the costs of social investment projects. Thus, plans to construct educational and health facilities in remote areas may be scrapped or cut back substantially, and a similar fate might greet plans to improve transport, water and sewage facilities outside principal cities. Plans to achieve universal primary education might be abandoned or postponed, thus perpetuating the cleavage between the literate and the illiterate.

A third distributional implication of demographic conditions is that rapid population growth may intensify the conflict between current and future welfare, adding the issue of intertemporal equity (i.e., equity among generations) to that of equity among socio-economic groups. A squeeze on resources for social investment due to rapid population growth may lead some decision-makers to adopt projects which contribute much more to meeting short-run, rather explicit objectives than to meeting less well defined longer-run objectives. Thus leaders may choose to meet a commitment to universal primary education at the expense of reduced investment in secondary and higher education or to improve secondary and higher education and to accept some reductions in primary education.

The production and consumption of family planning services.

Although interest in the presumed economic benefits of reductions in fertility has dominated recent discussion of the desirability of family planning pro-

^{10/}The Governments of many developing countries are committed to improving the lot of their poorest, most disadvantaged citizens (and some have explicitly called for redistribution of income and wealth to attain greater equality); it is appropriate, therefore, that Governments consider the distributional characteristics of social investment projects and take them, as well as the conventional aggregate effects, into account in allocating social investment.

grammes, the primary and original purpose of such programmes — to aid couples to limit their fertility — is fundamentally social, and it is appropriate to ask how the provision of family planning services, like any other social programme, is affected by demographic conditions.

Economies of scale in the production of family planning services have rarely been discussed explicitly, but a more or less conscious interest in sharing training and research and development costs over two or more countries is evidenced by numerous efforts on behalf of regional training institutes; standardization of terminology and data collection procedures; international co-ordination of research, experimental projects and programme evaluation; and the like. Furthermore, the concentration of family planning activities within the most populous regions of some countries suggests that administrative costs per unit of service may decline with increases in the scale of operations.^{11/} However, as long as family planning programmes reach only a relatively small proportion of the potential users, economies of scale can presumably be more easily obtained by increasing acceptance rates than by increasing population size.

National family planning programmes seem, on the whole, to have been characterized by a high degree of innovative activity. That may be due in part to the availability of funds for experimental activities and to the absence of established and constricting traditions. Innovative activity has not been limited to contraceptive technology but has extended to all phases of motivating couples delivering family planning services and evaluating the results. Whether still more innovation would have resulted if population had grown even more quickly is a moot point, but it is not obvious that innovation has been more frequent or more successful in countries where population pressure seems more severe.

Casual observation suggests that, compared with family planning activities in developed countries, family planning programmes in developing countries make considerable use of paramedical personnel, person-to-person motivational techniques, and multipurpose clinics and health personnel. This is consistent with the usual premise that in developing countries it is efficient to substitute relatively abundant unskilled and semi-skilled labour for relatively scarce capital and highly trained individuals. Further substitution of the same kind in response to continued population growth does not, however, appear likely to be important in scope or significance.

The mix of family planning activities carried on by the typical national programme is large. Broad categories of activities such as providing clinical services, conducting information campaigns and promoting the distribution of contraceptives through commercial outlets can each be subdivided into more specific programmes. For instance, clinically oriented activities may include vasectomy camps, post-partum programmes, and “refresher” courses for ordinary physicians, while informational activities may include mass media campaigns,

^{11/}Available data on trends and national differentials in unit costs are not sufficient to test the hypothesis of economies of scale in family planning programmes. See the important study by Warren Robinson, “A cost-effectiveness analysis of selected national family planning programmes” (Pennsylvania State University, 1969).

use of village-level motivational workers, and family life and population education in schools.

Even though family planning programme directors have some latitude in determining how a particular activity or mix of activities will be carried on, the selection of activities has important implications for the distribution of family planning services among socio-economic groups and for the inputs and technology needed. Thus a post-partum programme reaches women who can arrange to give birth in a hospital or clinic; a mass media campaign may be relatively ineffective in reaching the illiterate poor in remote areas; and the use of motivational workers may be effective primarily in rural areas. Moreover, each of these activities makes fairly specific demands on resources, possibly entailing a relatively efficient use of scarce resources. Thus surgeons may be efficiently used at vasectomy camps, and population education in schools may exploit a pre-existing and trusted channel of communication.

Demographic conditions, social development and social investment policy

The foregoing discussion suggests that giving more attention to the implications of demographic factors may lead to improvements in the efficacy of social investment and to gains in social development. The implications of demographic conditions for innovations, for changes in input and programme mix, and for economies of scale in the production of social goods and services were specifically considered, as were implications for the distribution of social goods and services among socio-economic groups. The discussion did not, however, explore the relationships between population and such fundamental determinants of social change as the influence of modernizing elites, the extent of urbanization and the degree of disintegration of traditional economic structures.

Indeed, the relationships among demographic conditions, social development and social investment discussed in the preceding sections of this paper comprise only a small portion of the interrelationships among the socio-economic variables that determine the course of social and economic development. While unqualified emphasis on the complexity of the development process can have a paralysing effect on the application of analytical methods to policy formation and decision-making, it remains true that both social and population policy must be consistent with the broader setting in which they operate.

For instance, considerations of social equity may seem to imply that secondary education should be available uniformly throughout a country, but unless employment opportunities for secondary school graduates were distributed in the same way, the effects of such a policy might be to increase internal migration, social tensions and even regional disparities. Similarly, heavy emphasis on the social benefits of publicly financed and planned extensions of public utilities and transport facilities might lead to failures in investment. For example, television broadcasting facilities should not be based exclusively on television's capacity to entertain but ought to take account of its capacity to contribute to a sense of national community and to inform and motivate large numbers of people.

This final section attempts to link the set of relationships previously dis-

cussed to the broader framework of development and to identify some implications for social and population policy. It seeks to do so by combining with the foregoing analysis of the implications of demographic conditions for social investment and social development the proposition that demographic behaviour, and especially fertility, are affected by social investment and social development. A casual link running from social conditions to demographic behaviour is basic to many explanations of historical declines in fertility and of fertility differentials among socio-economic groups, and it raises the possibility of a "vicious circle" of social development: rapid population growth slows social development, thereby preventing or hindering declines in the high fertility rates that cause rapid population growth.

The highly aggregative and vague way in which this hypothesis of mutual causality is formulated reduces its usefulness and significance. Indeed, expressed in terms of aggregate fertility and aggregate social development the hypothesis cannot really be tested empirically or rigorously analysed. The only policy implication it yields is that the viability and efficiency of both family planning programmes and social development plans may depend on their being mutually consistent and supportive.

The hypothesis is considerably improved by taking into account that the impact of social development on fertility depends both on to whom social goods and services are distributed (since fertility decisions are made by individual couples) and on what social goods and services are produced (since social goods and services presumably differ in their effect on fertility).

The importance of the distribution of social goods and services is due to the fact that the effective capacity to bear children, unlike the effective capacity to consume or to save, is rather widely and broadly distributed across the entire (female) population. Accordingly, to induce a general decline in fertility it is not sufficient to increase the consumption of social goods and services by a relatively small number of rich couples (who in any case may already limit their fertility); instead it is necessary to increase the consumption of social goods and services by all parts of the population and thereby to influence the fertility behaviour of a substantial proportion of the population. In contrast, policies designed to influence economic behaviour might appropriately be directed towards relatively well-to-do groups, since they in fact account for a disproportionately large share of all consumption, saving and investment.

The composition or mix of the social goods and services consumed is of course related to their distribution. Thus, while expansion of primary school enrolment and immunization programmes generally implies improvements in distribution, that is not necessarily true of increases in outlays for university education or for large well-equipped hospitals. Still, the impact on fertility of various social goods and services is presumably not uniform and the mix of social goods and services may significantly influence the extent of any changes in fertility. It may be suspected that improvements in the education of women or in immunization programmes will have a greater effect on fertility than improvements in medical care for the elderly or in recreational facilities, but there is little information to indicate what mix of social goods and services would have the strongest effect on fertility.

The disaggregation of social goods and services by mix and by distribution, as sketched above, points towards several interesting improvements in the crude "vicious circle" hypothesis. In the first place, fertility, and hence the rate of population growth, may depend upon and affect not only aggregate social development but also the distribution of social goods and services. If rapid population growth tends to increase or perpetuate inequity in the distribution of social goods and services and if such inequity contributes to high fertility, there may be a "vicious circle" of social inequity and high fertility.

The broad policy implication of such a vicious circle is that efforts to improve the distribution of social goods and services and efforts to reduce fertility are likely to be more effective if they are carried on together — that is, they are likely to be mutually reinforcing. This may mean that social investment that might otherwise be regarded as "ethically desirable but economically not viable" may actually be efficient. Thus construction of schools and medical facilities in remote areas, provision of public utilities in villages and shanty towns, and socially motivated employment creation may contribute significantly to declines in fertility. To some extent, then, a rather equitable distribution of social goods and services may be efficient as well.

Two possible extensions of the hypothesized vicious circle of social inequity and high fertility imply that if social goods and services are distributed more equitably than economic goods and services, greater emphasis on social development relative to economic development may favour reductions in fertility.^{12/} One argues that greater emphasis on social development will improve over-all relative equity and lead couples to limit their fertility. The other argues that greater emphasis on social development will improve the absolute welfare of large numbers of relatively poor couples and lead them to limit their fertility.

Policy implications are more difficult to discern once the mix of social goods and services is taken into account, for that mix affects and is affected by both the level of fertility and the distribution of social goods and services. Recognizing that certain social goods and services have relatively more impact on couples' fertility — or are distributed relatively more equitably, or both, the major policy problem is to identify and thereafter to produce the social goods and services which both affect fertility and are distributed fairly equitably. Such social goods and services as primary education, education of women, basic health education, and basic maternal and child health care would seem likely candidates for special emphasis. It may be presumed that family planning service, both motivational and clinical, meet the twin criteria of affecting fertility and of being widely distributed.

Turning finally to the implications for social investment of the inter-relationships among fertility and the mix and distribution of social goods and services, it is evident that the inputs and technology used to produce social goods and services depend upon and affect the mix produced and their distribution. For

^{12/}The proposition that social goods and services are distributed more equitably than economic goods and services is not contradicted by evidence that the economic benefits of many social programmes and projects tend to accrue more to the rich than to the poor.

instance, construction of a small clinic, school or cultural centre in a rather isolated town or village reflects related decisions as to what services are to be provided, to whom, and how. In selecting investment projects the input mix and technology are among the variables to be considered and co-ordinated with the mix and distribution of the goods and services to be produced.

Ultimately, in formulating social investment policy, decision-makers need to take into account every dimension of a social investment decision — what is to be produced, how, and for whom — as well as its interdependence with demographic behaviour. They should, moreover, be prepared to adapt their policy to changes over time in the broad socio-economic environment and in demographic conditions.

LAW, HUMAN RIGHTS AND POPULATION: A STRATEGY FOR ACTION

by
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It is entirely possible that the most urgent conflict confronting the world today is not that between nations or ideologies, but rather between the pace of growth of the human race and the disproportionate increase in the production of resources necessary to support mankind in peace, prosperity and dignity. Oddly, it has been only within the past decade that the problems associated with population growth have seemed to be a proper subject for legal concern. Similarly, the conscious relating of basic human rights to the subject of world population in general and family planning specifically is of comparatively recent origin.^{1/} That any attempt to control population growth touches on certain aspects of human rights is obvious. Yet the subject matter is relatively unexplored.^{2/} Even in its unexplored state the potential for contributing to an increased understanding of not only the population problem but of the issue of human rights as well is significantly high to merit the shift in attention. Because research in this area is of so recent an origin, this article is designedly exploratory in nature. It seeks simultaneously to stimulate and provoke further research, thought and discussion on the subject. To this end it is divided into three parts: first, a review of the status and relevance of the concept of human rights; second, a discussion of the link between human rights and population control; and third, a proposal for a research strategy of action.

Status of human rights

The status of human rights has traditionally been linked to the types of instruments into which they are incorporated. Thus, the answer to the question whether human rights are legally or only morally binding upon states usually hinges upon the fulfilment or nonfulfilment of the various requirements under the law of treaties. As is often the case, where human rights are dealt with in such

* The opinions expressed in this paper are the author's own and do not necessarily reflect the views of the ECAFE secretariat or of the United Nations.

^{1/} See generally "The world population crisis: policy implications and the role of law", *Proceedings, Regional Meeting of American Society of International Law at the University of Virginia*, Mar. 12, 13, 1971, (John Bassett Moore Society of International Law, University of Virginia School of Law).

^{2/} Thus, the United Nations Committee for Programme and Co-ordination in 1968 cited the human rights aspects of family planning as an area not yet adequately explored. 45 United Nations. Economic and Social Council, Supp. G, United Nations. Doc. E/4493 (1968). For a hint of the relatively meagre literature in this field see Lee, "Law and family planning," *Six Studies in Family Planning* (Apr. 1971) (originally a background paper commissioned by the World Health Organization's Expert Committee on Family Planning in Health Services for its meeting November 24-30, 1970); Lee, "Population laws and human rights," *African Population Conference*, (Pop. Conf. 2/5); Partan, *The Legal Capacity of the United Nations System in the Field of Population* (Law and Population Book Series No. 3, 1972).

instruments as declarations,^{3/} proclamations,^{4/} or unratified covenants,^{5/} they are considered morally, but not legally, binding. Only duly ratified conventions^{6/} are given legally binding effect, and then only on the countries which have ratified them. This treaty-oriented approach to human rights has been subscribed to by many jurists.^{7/}

It is submitted by this author that human rights, to the extent that they have met the conditions prescribed below, are ipso facto legally binding upon States, regardless of the existence of a duly ratified treaty, for human rights, by definition, are "rights which attach to all human beings equally, whatever their nationality."^{8/} As such, the legal validity of their application cannot be rooted solely in a mere piece of paper signed and ratified by States.

By emphasizing the formal or procedural aspects of human rights treaties, the traditional approach seems to confuse the instruments stipulating human rights with the substantive human rights themselves. Rather, the analysis of the

^{3/} Documents A/CONF. 32/6, at 114 (1967) and Add. 1, at 5 (1968) list the following "declarations" on human rights adopted by the General Assembly through 1967:

Universal Declaration of Human Rights (1948); Declaration of the Rights of the Child (1959); Declaration on the Granting of Independence to Colonial Countries and Peoples (1960); Declaration on the Elimination of All Forms of Discrimination (1963); Declaration on the Promotion Among Youth of the Ideals of Peace, Mutual Respect and Understanding Between Peoples (1965); Declaration on the Elimination of Discrimination Against Women (1967). A "declaration" may be codified into a convention which enters into force upon receiving a requisite number of ratifications, as in the case of the Declaration Against Racial Discrimination (1963), which was codified in 1965 and entered into force in 1969, General Assembly res. 2106, 20 United Nations GAOR Supp. 14, p. 47, United Nations (A/6181), or it may be codified but lacks the requisite number of ratifications to enter into force, as in the case of the Universal Declaration of Human Rights, General Assembly res. 217A, United Nations (A/810) p. 71, which was codified into two international covenants in 1966, see note 5 *infra*, but has not yet entered into force. A declaration may also, of course, stand alone unaccompanied by codification, as in the case of the great majority of declarations cited above.

For the complete language of declarations, proclamations and conventions adopted prior to 1967, see *Human Rights: A Compilation of International Instruments of the United Nations* (1967) United Nations publication; see also Brownlie, *Basic Documents on Human Rights* (1971). Moreover, for a report on the status of multilateral agreements in human rights concluded under United Nations auspices, see United Nations (E/CN.4/907/Rev.5); see also (A/CONF. 37/7/Add.1) for a report of agreements concluded under the auspices of specialized United Nations agencies.

^{4/} See e.g., "Teheran Proclamation on Human Rights," United Nations (A/CONF. 32/41).

^{5/} See e.g., "Covenants on economic, social and cultural rights and on civil and political rights," General Assembly res. 2200, 21 United Nations GAOR Supp. 16, pp. 49-58, United Nations (A/6316).

^{6/} See e.g., International Convention on the Elimination of All Forms of Racial Discrimination, General Assembly res. 2106, 20 United Nations GAOR Supp. 14, p. 47, (A/6181); "Convention on the Prevention and Punishment of the Crime of Genocide," General Assembly res. 260A, United Nations (A/810), p. 174"; Supplementary Convention on the Abolition of Slavery, the Slave Trade and Institutions and Practices Similar to Slavery," 266 UNTS 3 (1957); "Convention for the Suppression of Traffic in Persons and of the Exploitation or the Prostitution of Others", General Assembly res. 317, (A/1251), at 33.

^{7/} H. Kelsen, *Principles of International Law* 144, 145; H. Lauterpacht, *International Law and Human Rights* 397-417; Schweb, "The influence of universal Declaration of Human Rights on international and national law", *AM. Soc'y Int'l L. Proceedings* 217 (1959); P. Drost, *Human Rights as Legal Rights* 32 (1951).

^{8/} Waldock, "Human rights in contemporary international law and the significance of the European convention," 11 *Int'l & Comp. L.Q.* 3 (Supp. 1965) (the paper was delivered at The European Convention on Human Rights).

binding force of human rights must be approached also from their non-treaty sources: natural law, customary international law and general principles of law as recognized by civilized nations. Each of these sources has contributed to the development of human rights. These sources of human rights will be briefly discussed in the ensuing space, with special emphasis on the formation of customary international law in the light of developments in the twentieth century.

A. Natural law

Whether in their manifestation as “inherent rights,” “fundamental freedoms” or “natural justice,” human rights are synonymous with the law of nature. Except for those extreme positivists who would deny in toto the existence of natural law,^{9/} the latter is deemed to underlie both domestic legislation and international agreements, finding expression in such basic instruments as the United Nations Charter^{10/} and national constitutions.^{11/} Yet even for these positivists, to the extent that human right-natural law has already been incorporated into these basic laws, it is already binding upon States regardless, or even in spite, of a treaty.

B. Customary international law

The recent trend of codifying customary rules of international law into conventional international law^{12/} is reflected in recent attempts at codifying human rights into treaty form.^{13/} It should be noted, however, that in the absence of a binding treaty, the validity of international custom as the second source of international law in the criteria of the International Court of Justice^{14/} remains undiminished. Thus, those human rights based on international custom continue to be binding upon States, notwithstanding the latter’s failure to ratify or adhere to such treaties.

The importance of custom-based human rights assumes growing proportions in light of the increasingly active involvement of the United Nations in the field of

^{9/} See, e.g., Kelsen, “The pure theory of law,” 51 L.Q. Rev. 517 (1935); Kelsen, “The pure theory of law and analytical jurisprudence,” 55 Harv. L. Rev. 44 H. Lauterpacht, *Modern Theories of Law* 105-38 (1938); W. Ebenstein, *The Pure Theory of Law* (1945).

^{10/} Thus, the United Nations Charter makes seven references to human rights in addition to using such terms as “fundamental freedoms” and “inherent rights.” An example of the latter provide that “nothing in the present Charter shall impair the inherent right of individual or collective self-defence.” United Nations Charter art. 51. (emphasis supplied). The basic nature of the Charter is evidenced in Article 103, under which obligations under the Charter shall prevail over those demanded by any other international agreement, past or future.

^{11/} See, e.g., United States Const. amend. I-X, especially the due process clauses. See also the American Declaration of Independence of 1776, which contains the renowned passage:

(We) hold these truths to be self-evident — That all men are created equal; that they are endowed by their Creator with certain **inalienable rights**; that among these are life, liberty and the pursuit of happiness. (emphasis supplied).

^{12/} Lee, “International Law Commission re-examined,” 59 A.m.J.Int’l L. 545-46

^{13/} The codification of the Universal Declaration of Human Rights into the 1966 International Covenants on Economic, Social and Cultural Rights and on Civil and Political Rights and the codification of the United Nations Declaration on the Elimination of All Forms of Racial Discrimination into the International Convention on the Elimination of All Forms of Racial Discrimination are examples of this practice.

^{14/} I.C.J. Stat. art. 38, para. 1.

human rights.^{15/} That the United Nations has clear authority to discuss and make recommendations on human rights matters is specifically provided for in Articles 10, 13, 55 and 62 of the Charter. While it is not contended that individual General Assembly resolutions have a legally binding effect upon members of the United Nations, repeated and near-unanimous resolutions or declarations may achieve such an effect through accelerating the custom-generating process. Judge Tanaka describes well the working of such process:

According to traditional international law, a general practice is the result of the repetition of individual acts of States constituting consensus in regard to a certain content of a rule of law. Such repetition of acts is an historical process extending over a long period of time...The appearance of organizations such as the League of Nations and the United Nations, with their agencies and affiliated institutions, replacing an important part of the traditional individualistic method of international negotiation by the method of "parliamentary diplomacy"...is bound to influence the mode of generation of customary international law. A State, instead of pronouncing its view to a few States directly concerned, has the opportunity, through the medium of an organization, to declare its position to all members of the organization and to know immediately their reaction on the same matter. In former days, practice, repetition and *opinio juris sive necessitatis*, which are the ingredients of customary law might be combined together in a very long and slow process extending over centuries. In the contemporary age of highly developed techniques of communication and information, the formation of a custom through the medium of international organization is greatly facilitated and accelerated; the establishment of such a custom would require no more than one generation or even far less than that. This is one of the examples of the transformation of law inevitably produced by change in the social substratum.^{16/}

The question of when the recommendatory power of a General Assembly resolution is transformed into a legally binding nature would hinge upon the intent of the resolution, the extent of the consensus supporting it, and the repeated endorsements it receives both in and out of the United Nations. Once completed, the metamorphosis would endow the General Assembly resolution with customary law obligations for member states which would be as binding as if incorporated in a ratified treaty.^{17/} The United Nations Legal Counsel, aptly stated:

The effect of a resolution may vary from case to case and even from State to State, but it seems undue conservatism to suggest that Assembly resolu-

^{15/}For an excellent review of United Nations activity in the field of human rights see J. Carey, *United Nations Protection of Civil and Political Rights*.

^{16/}*Southwest Africa Cases (Ethiopia v. South Africa, Liberia v. South Africa)*, Second Phase, (1966) I.C.J. 17, 291-92 (Judge Tanaka's dissenting opinion). In this case, Ethiopia and Liberia sought to establish nondiscrimination as internationally binding on grounds of repeated resolutions and declarations of the General Assembly and other international organs. Without going into the merits of the issue, however, the Court dismissed the case on procedural grounds in that the applicant states failed to establish a "legal right or interest" in the subject-matter. Judge Tanaka dissented from the Court's holding on "legal right or interest" and proceeded to consider the question of whether "resolutions and declarations of international organs can be recognized as a factor in the custom-generating process."

^{17/}Partan, *op.cit.*

tions have not, in fact, become one of the principal means whereby international law is now moulded, especially in those instances ... (as with) the Universal Declaration of Human Rights of 10 December 1948, where the resolution has enjoyed the support of virtually all States Members, both at the time of its adoption and subsequently.^{18/}

The comparative effectiveness of General Assembly resolutions or declarations over that of treaties as vehicles for realizing family planning as a human right is well summarized as follows:

As to governments that are willing to accept the family planning right as stating a binding obligation, the definition of the scope of that obligation can come into being equally as effectively through customary law generated through careful development of an Assembly declaration as through... careful development of a draft treaty. The United Nations process and Assembly declaration would lack the immediacy of formal effect achieved through the ratification of a treaty, but considering that the treaty is not likely to be accorded self-executing status in municipal law, the implementation of the right in the municipal law of the parties would depend upon affirmative action by the government regardless of whether the right is framed in a treaty or in an Assembly declaration.

As to governments that appear unwilling to acknowledge an international law obligation to respect the family planning right, the United Nations process leading to an Assembly declaration holds promise of having a greater impact in shaping the views of the government than the treaty process. For example, where a government is divided on a human rights issue, a draft treaty might be dismissed as formulating new obligations that may be accepted or ignored, whereas an Assembly declaration is likely to be cast as the recognition of existing customary law obligations and may strengthen the hand of the proponents of human rights within the government. The force of the declaration would of course be limited by the care and attention given to it in the United Nations and the degree to which governments are in fact willing to accept the declaration as framing human rights that they consider themselves under an obligation to respect.

Finally, United Nations experience in the human rights area shows that governments have been unwilling to accept international implementation procedures. If governments remain unwilling to submit any aspects of their observance of human rights obligations to international adjudication, there seems little purpose in casting those obligations in solemn treaty form. The effective "realization of human rights and fundamental freedoms for all" might more readily be advanced through the United Nations process of review, study and debate, leading to periodic reiteration of particular human rights as obligations of governments.^{19/}

^{18/}Stavropoulos, "The United Nations and the Development of International Law 1945-1970," reprinted in OPI/411. See also the following statement of Edvard Hambro, President of the twenty-fifth session of the United Nations General Assembly and a distinguished jurist in his own right: "The fact is that the wide and pervasive international acceptance of the Declaration allows us to state that it has become, or at least is becoming, international law." Address before the United Nations Association of the United States in New York, November 1970.

^{19/}Partan, *op.cit.* pp. 31-2.

C. General principles of law

Certain additional rights may be implied in express rights by reasoning or application of the general principles of law — the third source of international law in the World Court's criteria.^{20/} Such inferred rights may in time ripen into express rights through the United Nations custom-generating process. Thus, although the right to family planning was not explicitly included in the Universal Declaration of Human Rights or the two 1966 International Covenants on Economic, Social and Cultural Rights and on Civil and Political Rights, such a right may be inferred from the rights to equality of the sexes, privacy, conscience, work, adequate standard of living, health and well-being (physical, mental, and environmental), education (including that for the full development of the human personality) and freedom from hunger.^{21/} The right to family planning was subsequently incorporated in the Teheran Proclamation on Human Rights^{22/} and the United National Declaration on Social Progress and Development.^{23/} Likewise, although the right to freedom from hunger was not specifically included in the Universal Declaration of Human Rights, it was later stipulated in the International Covenant on Economic, Social and Cultural Rights.^{24/}

Summarizing from the foregoing discussion, this author considers the traditional treaty approach to human rights as too restrictive as well as jurisprudentially unsound. Once a right has met any of the above conditions, it is automatically a legal right and carries with it all the implications of that status.

Human rights Aspects in Population

Family planning was formally accepted as a basic human right in the Declaration on Population by World Leaders, signed by twelve Heads of State on Human Rights Day, December 10, 1966:

“We believe that the majority of parents desire to have the knowledge and the means to plan their families; that the opportunity to decide the number and spacing of children is a basic human right.”^{25/}

In the following year, eighteen more Heads of State joined the list.^{26/} Summarizing the rationale for linking human rights to family planning, Secretary General U Thant wrote:

“The Universal Declaration of Human Rights describes the family as the na-

^{20/}See note 14 supra.

^{21/}Lee, “The unique role of UNESCO in promoting the teaching, study, dissemination and wider appreciation of international law (background paper prepared for the United States National Commission for UNESCO, Doc. SEM/LAW (67)6, at 15).

^{22/}See note 4 supra, para. 16 and resolution XVIII of that Conference, entitled “Human rights aspects of family planning.”

^{23/}General Assembly res. 2436, 23 United Nations GAOR Supp. 18, at 45, (A/7388).

^{24/}General Assembly res. 2200, 21 United Nations GAOR Supp. 16, at 49, (A/6316).

^{25/}United Nations Population Newsletter, April, 1968, p. 44.

^{26/}The twenty-eight states were: Australia, Barbados, Colombia, the Dominican Republic, Finland, Ghana, India, Indonesia, Iran, Japan, Jordan, Republic of Korea, Malaysia, Morocco, Nepal, Netherlands, New Zealand, Norway, Pakistan, the Philippines, Singapore, Sweden, Thailand, Trinidad and Tobago, United Arab Republic, United Kingdom, United States and Yugoslavia.

tural and fundamental unit of society. It follows that any choice and decision with regard to the size of the family must irrevocably rest with the family itself, and cannot be made by anyone else. But this right of parents to free choice will remain illusory unless they are aware of the alternatives open to them. Hence, the right of every family to information and to the availability of services in this field is increasingly considered as a basic human right and as an indispensable ingredient of human dignity.”^{27/}

Official United Nations recognition of the principle that family planning constitutes a basic human right did not come until May 1968, when the United Nations Conference on Human Rights in Teheran proclaimed that “parents have a basic human right to determine freely and responsibly the number and the spacing of their children.”^{28/} A unanimously adopted resolution added the language “a right to adequate education and information in this respect” for all “couples.”^{29/}

An examination of the conference proceedings reveals that the term “couples,” instead of “parents” or “families,” was used in the resolution in order to ensure that couples may “decide to have no children at all.”^{30/} While the Yugoslav delegation stressed “the fundamental right of women to conscious motherhood,”^{31/} the Belgian and French delegations assumed that the “right to adequate education and information” included the right to “available services”^{32/} or “the means for birth control”^{33/} — an assumption not generally supported by other delegations.

The 1969 United Nations Declaration on Social Progress and Development is significant because it is the first United Nations resolution to require governments to provide families with not only the “knowledge,” but also the “means necessary to enable them to exercise their right to determine freely and responsibly the number and spacing of their children.”^{34/}

The question may be raised as to whether the language of the Teheran Proclamation would allow couples to have as many children as they want (or do not want). The Proclamation specifically provides that family planning must be made not only “freely,” but also “responsibly.” Involved in a responsible parenthood is the balancing of the “individual” with the “collective” right — i.e., from the right of children to that of the society at large. Just as the “individual” right to freedom of speech must take into account the “collective” right whether in time of peace (e.g., libel, defamation, nuisance, obscenity) or during war or emergency (e.g., treason, sedition, censorship), so must the “individual” right of family planning be harmonized with the “collective” right, particularly in certain circumstances where the resources, both actual and potential, of a

^{27/}United Nations Population Newsletter, *supra* note 25, at 43.

^{28/}Teheran Proclamation on Human Rights para. 16.

^{29/}The additional language is found in resolution XVIII: Human Rights Aspects of Family Planning.

^{30/}2nd Comm., 23 United Nations GAOR, U.N. Doc. A/CONF.32/C.2/SR.5, at 57 (1968).

^{31/}2nd Comm., 23 United Nations GAOR, U.N. Doc. A/CONF.32/C.2/SR.12, at 143 (1968).

^{32/}United Nations A/CONF.32/C.2/L.19 (1968) and 2nd Comm., 23 United Nations GAOR, A/CONF.32/C.2/SR.12, at 142 (1968).

^{33/}*Id.*, p.144.

^{34/}Art. 22(b). The Declaration was adopted by the General Assembly by a vote of 119 in favour, none opposed, with 2 abstentions.

country dictate the limitation of the size of its population in the interest of all. The question of when exactly does the “individual” right give way to the “collective” is always difficult to answer — even in the case of freedom of speech notwithstanding its century-old development and refinement.^{35/} However, it is equally clear that inability to define with exactitude the relationship between the two rights does not negate their existence.

Strategy for action

Since “right” and “duty” are two sides of the same coin, there is a corresponding duty on the part of all concerned not only to refrain from activities which would impede the exercise of the family planning right, but, positively, to undertake the necessary measures for the realization of such a right. Section III is devoted to a proposed strategy for action which is meant to speed the establishment of an environment in which family planning will be effective. Two broad areas of action are proposed for the realization of the family planning right: creation of a Charter on Human Rights and Population and an in-depth, world-wide study and reform of laws which inhibit family planning.

A. Charter on Human Rights and Population

It may be seen that the Teheran Proclamation and the Declaration on Social Progress and Development have laid down certain minimum conditions for the exercise of the family planning right. Still other conditions may be implied as being necessary to enable couples to determine “freely and responsibly” the number and spacing of children. The following is a composite list of fourteen such conditions, without which the family planning right would prove illusory:

1. The right to adequate education and information on family planning.^{36/}
2. The right of access to the means of practising family planning.^{37/}
3. The right to the equality of men and women.^{38/}
4. The right of children, whether born in or out of wedlock, to equal status under the law and to adequate support from natural parents.^{39/}
5. The right to work.^{40/}
6. The right to an adequate social security system, including health and old-age insurance.^{41/}
7. The right to freedom from hunger.^{42/}
8. The right to an adequate standard of living.^{43/}
9. The right to freedom from environmental pollution.^{44/}

^{35/}The recent litigation involving the publication of the Pentagon Papers by the New York Times and the Boston Globe are cases in point. See *New York Times Co. v. U.S.*, 403 U.S. 713 (1971).

^{36/}Teheran Proclamation on Human Rights, resolution XVIII.

^{37/}United Nations Declaration on Social Progress and Development art. 22(b).

^{38/}Universal Declaration of Human Rights art. 2; International Covenant on Civil and Political Rights art. 3; International Covenant on Economic, Social and Cultural Rights art. 3; and Declaration on the Elimination of Discrimination Against Women arts. 1, 4, 6, 9 and 10.

^{39/}Declaration of the Rights of the Child principles 1, 4, 6, 9 and 10.

^{40/}International Covenant on Economic, Social and Cultural Rights art. 6.

^{41/}*Id.* art. 9.

^{42/}*Id.* art. 11(2).

^{43/}*Id.* art. 11(1).

^{44/}*Id.* art. 12(2) (b).

10. The right to liberty of movement.^{45/}
11. The right of privacy.^{46/}
12. The right of conscience.^{47/}
13. The right to separation of Church from State, law from dogma.^{48/}
14. The right to social, economic and legal reforms to conform with the above rights.^{49/}

Fulfilment of each of the above rights requires in turn the fulfilment of certain preconditions. The first right, for example, pre-supposes a universal literacy and compulsory education, thus necessitating a revision of education law toward that end as well as permitting or requiring sex or family planning instruction in schools. Existing laws on obscenity need to be changed if they forbid the publication, broadcasting, televising or mailing of family planning material. Regulations of publicly owned mass communication media should be re-examined with a view to determining their obligation to disseminate family planning information.

Also to be studied is how the individual's right to adequate education can harmonize with the collective demands especially in the face of a shortage in resources, both actual and potential.^{50/} How may the conferment of certain benefits, such as the family or child allowances, while meeting the actual needs, not constitute a "bonus" for increased fertility? Conversely, how may the withdrawal of certain benefits, while furthering the aim of a population policy, not constitute a penalty for the innocent or the needy, thereby impinging upon their basic rights? What controls must be established to prevent the effects of a law from being contradicted in purpose by another law or frustrated in its implementation by inadequate or inconsistent administrative decrees?^{51/} What should be the relations between municipal and international law through the medium of human rights, which includes the family planning right?

It is obvious that a systematic approach to the above problems calls for a joint and co-ordinated effort on the part of all government agencies con-

^{45/}International Covenant on Civil and Political Rights art. 12.

^{46/}Id. art. 17.

^{47/}Id. art 18 (1).

^{48/}Id. arts. 18 and 26.

^{49/}This right flows logically from the fact that human rights are *ipso facto* legal rights, entailing legal obligations on the part of governments to undertake the necessary reforms to conform with such rights.

^{50/}See text accompanying note 35 supra.

^{51/}The effects of the French legalization of the sale and distribution of contraceptives in 1967, for example, must be weighted against yearly increases in family allowance payments, on the one hand, and the nonenactment of administrative decrees to implement the 1967 law, on the other. As of this writing, many French gynecologists still refuse to either counsel or prescribe contraceptives to patients in the absence of such administrative decrees. Similarly, despite the recent liberalization of an abortion law in the State of New York, confusion reigns in New York City because of local health regulations restricting the performance of abortions on an out-patient basis. New York Times, 20 Oct, 1970, p. 1, col. 5.

cerned.^{52/} The hitherto adoption of piece-meal legislation or measures focusing generally on the availability of contraceptives to the end-users must be seriously reconsidered.

A systematic elaboration of each of the fourteen rights as listed above may well form the object of a "Charter on Human Rights and Population," to be drafted by an International Symposium on Population and Law,^{53/} with the cooperation of UNESCO, WHO, ILO, FAO, UNICEF, the Commission on Human Rights, the Commission on the Status of Women and the Population Commission. The draft Charter would be submitted to the World Population Conference in 1974 for deliberation and possible adoption as its recommendation to the General Assembly. The resultant Charter would not fail to provide effective guidance for governments to implement the family planning rights.

B. Law and population project

The second area of action involves the establishment of a worldwide network of law and population projects to be funded by the United Nations Fund for Population Activities (UNFPA) or the International Planned Parenthood Federation (IPPF). The purpose, methods and funding arrangements are set forth below.

1. Purpose

The relating of law to population and family planning seeks to add a new dimension to existing programmes stressing the sociological, economic, political, religious, psychological, ideological, medical-pharmaceutical, demographic, and cultural aspects of population and family planning. It starts from the premise that law does have an impact upon the behaviour of people, although the exact extent of the impact varies from State to State and according to the subject matter. Furthermore, while law often reflects contemporary social norms and mores, its potential as a catalyst for social change should not be underestimated.

Three recent events lend particular urgency to the legal approach: first, the declaration by thirty Heads of State in 1967 that family planning is a basic human right; second, the unanimous adoption of a resolution by the United Nations Conference on Human Rights in Teheran in 1968 that family planning, including the right to information and instruction thereon, is a basic human right; and third, the declaration by the United Nations General Assembly that

^{52/}See the simultaneous promulgation of the following laws to implement the Chinese family planning programme: (a) Guides for Increasing the Supply and Reducing the Prices of Contraceptives, adopted by the Ministry of Commerce, the Ministry of Health, and the Chinese National Association of Marketing Co-operatives, *Chung-Hua Jen-Min Kung-ho-kuo Kuo-wu-yuan Kung Pao* (People's Republic of China, State Council Bulletin), 23 Mar. 1957, pp. 259-62; (b) Notice by the Ministry of Finance concerning Exemption from Commodity and Business Taxes on the Manufacture and Importation of Contraceptive Devices and Chemicals, *Id.*, 2 April, 1957, p. 308; and (c) Notice Issued by the Ministry of Health Stressing the Protection of Women and Youth Engaged in Rural Labour, the Intensification of the Campaign for Women's and Infants' Hygiene, and the Improvement of Health Service in the Nursery System, *Id.*, 2 April, 1957, pp. 313-15.

^{53/}Such a symposium is planned to be held in early 1974 by the Law and Population Programme of Fletcher School of Law and Diplomacy possibly in co-operation with IPPF and a United Nations organ.

1974 will be World Population Year, with the World Population Conference planned for August of that year.

Since reference to a "human right" imposes a legal, and not merely a moral, responsibility upon States, there is a legal duty on the part of each State to see that laws and policies which conflict with the implementation of the right be amended or abolished and that new laws and policies be adopted to conform with and further this right.

However, official recognition that family planning is a basic human right has seldom been followed by systematic legal reforms to bring the existing laws into line with that recognition. Restrictions continue to hamper the importation, manufacture, advertisement and transport of contraceptives. Education laws continue to forbid the teaching of population dynamics, family planning or human reproduction in schools; public health services remain unresponsive to the need for birth control counsel and clinics. The social welfare and income tax systems may favour large families. And abortion codes contribute to high-cost, high-risk illegal operations. Even where legal reforms have been instituted, important gaps exist owing to the lack of co-ordination. Low priority accorded to law codification in many emergent countries means retention of archaic laws inherited wholesale from former colonial powers, which often defeats the official policy favouring population and family planning.

In the light of the above; there is need for two major activities:

Law compilation. Legal reform will be impossible without an adequate knowledge of existing statutes, regulations, decrees and customary laws having a direct (or frequently an indirect) bearing on population and family planning. It is also important to know whether a certain law is in fact enforced and obeyed, or whether it has, by custom, become a dead letter. Compilation of the relevant materials is rendered more difficult by the fact that they may appear under a great variety of headings. In addition to laws and regulations in existence, the absence of laws or regulations in certain fields may also be significant.

The following list is incomplete.^{53a/} It is offered merely as suggestive of the types of law which should be considered. Only those portions of the law bearing directly or indirectly upon fertility need to be compiled.

1. Laws specifically concerned with family planning
 - Contraceptives (distribution, use, sale, advertising and display)
 - Sterilization
 - Establishment or prohibition of services
2. Criminal code
 - Obscenity
 - Abortion (Is it forbidden? Is consent of husband required?
On what grounds permitted? Who may perform? Where?)
3. Family and personal status law

^{53a/}For a complete listing see Cohen, "Guide for compiling population law" (Law and population monograph series No. 5, 1972).

- Minimum marriage age
- Divorce and re-marriage
- Polygamy
- Adoption
- Artificial insemination
- Voluntary and involuntary sterilization (requirement of consent of spouse)
- Succession
- Extended family (customary or tribal law)
- 4. Social welfare
 - Family and child allowances
 - Maternity leave and benefits
 - Child or female labour
 - Old-age security
 - Housing (including eligibility for public housing)
- 5. Education
 - Compulsory education (Availability to what age?)
 - Education for women
 - Sex education and population education (including mid-wife education)
 - Religious control of education
- 6. Public health and medical
 - Regulation of medical practice, including authorization of para-medical personnel to provide family planning services; medical ethics; mal-practice liability
 - Licensing of pharmacists, clinic and hospitals
 - Religious control of hospitals and clinics
 - Quality control of drugs and medical supplies (often used as an excuse to ban new and effective techniques)
 - Minors (age of consent for family planning services)
- 7. Commercial code and customs
 - Ban on import of certain medical supplies or literatures
 - Effective block on imports from certain sources, or favouring certain sources
 - Over-strict control on sales of drugs and medical supplies
- 8. Tax
 - Income tax exemptions
 - Tax provisions favouring large families
- 9. Land tenure
- 10. International migration and internal movement.^{54/}

It may be noted that an item, such as sterilization, may appear under a number of headings. The compilation of all the above-mentioned laws in one place and a description of the procedure for legal change would enable all interested people to know the state of the existing laws, to judge their compatibility with the principle of human rights and to follow the procedure for legal reforms.

^{54/}This is the newest addition to the list of facets of the population problem to be studied. For an analysis of the issues which bear on population migration in a developing nation, see Odujinrin, "Population migration problems in Nigeria," *The Population Crisis: Policy Implications and the Role of Law* 167 (Proceedings, Regional Meeting of American Society of International Law at the University of Virginia, 12 and 13 March, 1971, published by the John Bassett Moore Society of International Law, University of Virginia School of Law). See also R. Plender, *International Migration Law* (Law and Population Book Series No. 2, 1972).

Model codes. An important arm of the legal approach to population and family planning is the formulation of a model code or proposed revisions aiming at the full realization of the "human rights" ideals but taking into account also the existing laws as well as the political, social, economic, religious and cultural factors which give rise to such laws. The resultant synthesis of practice and theory, and of realism and idealism, could generate the necessary momentum for legal reforms as well as provide a basis for concrete action.

The ascertainment of common features in national laws and proposed legislation would enable the formulation of model codes or proposed legislative revisions for national or regional adoption and, ultimately, a world-wide model code, which might well serve as a basis for action on an international basis. This programme is so designed as to be an integral part of the United Nations General Assembly's plans for 1974. The Secretary General's official suggestions for the Year include the work envisaged herein.^{55/}

2. Methods.

To perform the law compilation and model code activities described above, two-year projects on law and population will be established in selected countries to be staffed by members of law and sociology faculties of leading local universities and institutions. They will be aided by research assistants in the discharge of the following functions:

- (a) Searching out, compiling and bringing up to date all the laws, statutory decrees and decisions which affect, or may affect, population and family planning, as exemplified under "Law compilation" above;
- (b) Describing customary laws if different from above;
- (c) Translating or supervising the translation of the above into official United Nations working languages (English, French or Spanish);
- (d) Preparing a monograph on Population and Law in their countries following a standard outline;^{56/}
- (e) Describing the procedure for changing the laws of their countries;
- (f) Offering an interdisciplinary seminar on law and population at their universities during the second year of the project;
- (g) Requiring the seminar students to draft a proposed set of laws on population and family planning, using as the point of departure the principle that family planning is a basic human right;
- (h) Submitting the proposed set of laws to a local board of advisors, made up of distinguished jurists, including high court judges, law professors and leading practitioners, for comment which will be incorporated into the final draft;
- (i) Sending copies of the above-mentioned materials to key individuals and organizations in their countries, particularly the Ministries of Justice, Education, Health, Social Affairs, Finance, Commerce, as well as the Attorney General, legislators and educators, as may be appropriate;
- (j) Forwarding copies of all the documents mentioned from (a) to (h) to the UNFPA or the IPPF and the Fletcher School of Law and Diplomacy;

^{55/}See "Report of the Secretary General: World Population Year, 1974 (proposed programme of measures and activities), 26 United Nations ECOSOC, (E/CN.9/245).

^{56/}This outline form was used in the first volume of the Law and Population Book Series, Population and Law (L. Lee & A. Larson eds. 1971).

- (k) Participating in an International Symposium on Law and Population to be held in early 1974 to discuss the experience in different countries and to consider the possibility of formulating model legal provisions suitable for adoption in various countries as well as a draft Charter on Human Rights and Population, for transmission to the United Nations World Population Conference in August 1974;
- (l) Assisting United Nations Population Programme Officers, Resident Representatives and governmental and nongovernmental officials in the legal aspects of population and family planning problems;
- (m) Performing such public services as lecturing and writing in order to explain the significance of the project and its findings; and
- (n) If, as is hoped, it proves possible to establish under United Nations auspices a permanent "legislative series" giving the laws of every country which affect population, then sending in to the series periodic reports on changes made in the laws.

3. Funding

The budget for the law and population programme of the Fletcher School provides not only for the salaries and expenses of the programme's personnel, but also for four in-depth studies on the relationship between law and behaviour to be undertaken in four countries in different regions of the world, the holding of meetings of an international symposium on law and population, publication of the Law and Population Book Series and Monograph Series. Both the UNFPA and the IPPF will consider applications for grants to fund the Law and Population Project described in the above sections.

As of this writing, institutions in some forty countries have expressed interest in establishing the law and population projects. Of these, nineteen applications for funding have been presented, formally or informally (Brazil, Ceylon, Chile, Costa Rica, Ethiopia, Ghana, India, Indonesia, Lebanon, Malaysia, Mexico, Morocco, Nepal, New Zealand, Nigeria, Pakistan, the Philippines, Thailand and Turkey). Those from Chile, Ethiopia, Ghana, Indonesia, Lebanon, Morocco and Turkey have already been approved by UNFPA, in addition to those from Mexico and New Zealand by IPPF and one from Malaysia by the Ford Foundation. IPPF has made available funds for the establishment of several other projects in Latin America and Africa, and the Pathfinder Fund has one in China.

Conclusion

Recognition of human rights as entailing legal, and not just moral, responsibility upon states holds vast potential for opportunity, particularly in the family planning field.^{57/} Aided by an "instant" custom-generating process through the United Nations, the family planning right obligates governments to match

^{57/}Even so, whether or not the application of international law will be effective in dealing with this problem is a difficult inquiry. For a positive answer to the question, see Nanda, "Can international law cope with the population crisis?", "The Population Crisis: Policy Implications and the Role of Law 113" (Proceedings, Regional Meeting of American Society of International Law of the University of Virginia, March, 1971, (John Bassett Moore Society of International Law, University of Virginia School of Law). See also Falk, "World Population and international law, 63" *Am. J. Int'l L.* 514 (1969).

deeds with words — heretofore generously given but with scant regard to compliance.

On the action front, it is to be hoped that a proposed United Nations Charter on Human Rights and Population together with a world-wide law compilation and reform movement will make family planning a realizable and effective human right.

POPULATION ASPECTS OF EDUCATIONAL PLANNING IN THE ECAFE REGION*

by

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When the developing countries of the ECAFE region embarked on deliberate programmes of economic and social development after the Second World War, they gave special emphasis to educational expansion, both as a part of the development objective and as a means to such development. The principal reason for this emphasis was the extreme shortage of educational facilities in these countries, as reflected by the low enrolment ratios at all levels, compared with the levels prevailing in the more developed countries of the world. It was felt, therefore, that a great expansion of such facilities was necessary in order to bring about a modernization of the developing countries. The efforts of Governments in this direction were paralleled by a corresponding increase in the private demand for education, motivated largely by the expectation that higher educational attainments would lead to economic advancement for the individual. The growth of this private demand was so substantial that the pace of educational expansion was set mainly by the financial resources of Governments, especially in countries where the public sector played the greater role in educational provisions.

As a result, the task of educational planning was dominated by the implications of the demographic trends on the one hand and by the allocation of resources for the purpose on the other. While individual countries made their own assessments of the educational situation and their own plans for the expansion of educational facilities, the work was much advanced by a great deal of international co-operation and discussion, especially in a series of conferences of educational authorities organized by UNESCO. In the course of this discussion, some basic features of educational planning were developed. The principal feature of the type of educational planning that came to be used was the role of enrolment ratios, i.e., the ratio of numbers of pupils enrolled at each level of education to the population of the age group corresponding to that level of education, as targets of educational development. The most important application of this approach was to the case of primary education. In the Karachi plan of 1959/60, the member countries laid down a target of universal and free primary education of at least seven years' duration to be attained by 1980. Individual countries adopted different targets; for example, the Constitution of India called for the attainment of this target by 1960.

When educational targets were laid down in this manner, the task of working out their practical implementation involved the demographic techniques of population projections by age and sex. While the basic techniques suitable for this purpose had been developed, especially through the work of the United Nations de-

* The opinions expressed in this paper are the author's own and do not necessarily reflect the views of his organisation or those of the ECAFE secretariat or of the United Nations.

mographers, they could only be applied with a certain amount of demographic information which was not widely available. Population projections had, therefore, to be carried out by making various assumptions about the prevailing situation and about the probable future course of mortality and fertility, often taken from the past experience of countries which had completed the demographic transition. Demographic trends therefore played a great part in the work of educational planning in the 1960s. Once the required population projections had been worked out, they could then be used to estimate numbers to be enrolled in the various levels of education. Given these enrolment estimates, they could then be used to estimate the financial requirements for the educational expansion envisaged in the plans of various countries. As a result, a meeting of ministers of education of Asian member countries participating in the Karachi plan, held in Tokyo in April 1962, decided that "Asian countries should move by stages to invest 4-5 per cent of their GNP in education by 1980, provided their rates of economic growth as individual countries can afford it".

The emphasis in the early years of the 1960s was therefore on long-term planning for education on the basis of enrolment ratio targets, and to work out their implications for the number of pupils to be enrolled and the current and capital costs involved in the programme of expansion. Very soon, however, it became apparent that the different levels of education had to be expanded in some relationship to one another. This was particularly forced upon educational planners by the need for education at a higher level to provide for the increase in the number of teachers required for expansion at the lower levels. This required complex adjustments over a long-term plan to take account of the intertemporal relationships involved. These problems were studied and patterns of dealing with them in countries at different stages of development were worked out in a number of studies, especially in the Asian model published by UNESCO in 1966. ^{1/}

While these improvements in the techniques of planning were being made in the course of the 1960s, educational expansion proceeded in the midst of rapid population growth. During the period 1950-1965, in the countries of the Asian region for which some data are available, the population of primary school age (6-12 years) increased by 50 per cent, that of secondary school age (13-17 years) by 43 per cent, and that of tertiary level age (18-21 years) by 34 per cent. In the same period, enrolments increased by 135 per cent in the first level of education, by 255 per cent in the second, and by 310 per cent in the third. As a result, the enrolment ratios increased from 28 per cent to 44 per cent in the first level of education, from 9 per cent to 23 per cent in the second and from 1.2 per cent to 3.7 per cent in the third. The fastest rate of growth has been at the secondary and tertiary levels; the progress towards the achievement of the Karachi plan target for primary education has been slow. It may be said that the high rate of growth of enrolments at the higher levels were due to the smaller base from which they started, but considering its general social and economic importance for development, the base of primary education was also small. It is more likely that the expansion at the higher levels was due to the importance attached to education at those levels on the one hand, and by the great pressure of private

^{1/} UNESCO, *An Asian Model of Educational Development 1965-1980* (Paris, 1966).

demand for those levels of education on the other, spurred by the requirements of high-level manpower in the newly independent Governments of the regions.^{2/}

While the foregoing account shows the position for the region as a whole, there has been great variation among individual countries. The position reached around 1965 in some of the countries of the region is shown in table I which gives the adjusted enrolment ratios calculated from UNESCO data by Professor Harbison and his colleagues.^{3/} The average figures in this table do not correspond to the average for the region as a whole, because the table gives unweighted averages of country figures, and because the table is based on enrolment ratios, adjusted for the normal duration of schools at different levels in the various countries.

Table 1. Adjusted enrolment ratios in ECAFE countries, c. 1965

Country	Level I	Level II	Level III
Afghanistan	17.52	3.25	0.38
Burma	80.18	8.99	1.38
Hong Kong	94.81	47.66	5.56
India	59.92	33.99	4.20
Indonesia	73.18	13.17	1.08
Iran	40.31	34.54	3.38
Khmer Republic	74.83	10.42	1.94
Korea, Republic of	105.76	36.54	8.09
Laos	53.49	2.46	0.10
Malaysia, West	89.30	32.06	2.01
Nepal	29.80	6.68	1.20
Pakistan	52.34	17.97	3.83
Philippines	111.49	87.58	21.46
Singapore	97.66	55.17	11.78
Sri Lanka	100.38	54.15	2.14
Thailand	62.50	15.13	2.45
Average ECAFE countries	71.47	28.74	4.44
Average 23 developed countries	106.49	65.37	16.82

Source: F.H. Harbison, Joan Maruhnic & Jane R. Resnick op. cit.

^{2/} Hla Myint, "The universities of southeast Asia and economic development", *Pacific Affairs*, 1962, pp. 116-127; reprinted in his *Economic Theory and the Underdeveloped Countries*, (Oxford University Press, 1971), chap. 9.

^{3/} F.H. Harbison, Joan Maruhnic & Jane R. Resnick, *Quantitative Analyses of Modernization and Development*, (Princeton, 1970).

Emerging problems of the 1970s

The first problem of educational development in the 1970s and beyond is the sheer quantitative magnitude of the further expansion needed to continue the process started in the 1960s. Population growth rates continue at a high level. There have been welcome signs of a fall in growth rates in the 1971 censuses of some countries, but the rates are still high. Some rough measure of the population growth factor as affecting the educational situation may be useful. According to the 1966 projections made for the UNESCO Asian model, the population growth from 1964 to 1980 was expected to be 46 per cent for the age group 6-12 years, 62 per cent for the group 13-17 years, and 73 per cent for the group 18-21 years. While the trends in fertility decline assumed in the projections have reduced the expected growth at the first level, the past demographic history has led to high growth rates to be expected in the next fifteen years. This is a factor which introduces special difficulties for future educational planning.

At the same time as the population base keeps expanding, there are also high hopes to increase further the coverage of the educational system. A projection made for the Asian model hoped to increase enrolment ratios from 61 per cent to 90 per cent at the first level of education, during the period 1964-1980, from 15 per cent to 33 per cent at the second and from 3 per cent to 5 per cent at the third. This meant that enrolments had to increase by 115 per cent at the first level, 250 per cent at the second and 180 per cent at the third or 155 per cent for all levels together. Even more staggering is the estimate of total educational costs that would have to increase more than threefold over the period.

This however, represents only one part of the story. As discussed above, the main thrust of educational planning in the 1960s was at the quantitative level and confined to a great extent to the problems within the educational system itself. The very success of the past programme at the quantitative level has raised further problems which are likely to dominate the scene in the coming decades. The problems are of two types, one dealing with the quality of education, and the other with the relationship of the educational system to the rest of society. To some extent, the two problems are interrelated.

There is some question of the extent of the increase of enrolments that actually took place. The typical source of data for measuring this comes from the departments of education in the various countries and put together on a world-wide basis in the UNESCO statistical yearbooks. The accuracy of these data is open to some doubt. They include part-time students, who might be employed on a full-time basis elsewhere. They include children in the pre-primary classes, whose educational content is not very clear. And they include students registered at the beginning of the school year, but who drop out soon afterwards. Indeed, it is highly probable that enrolment figures from this source are biased in an upward direction, so long as grants to schools are based on the numbers of students enrolled. In some countries, it is possible to make a check of the data from this source by comparing them with the numbers reporting as students in the population censuses. While the classification of activities in the censuses is itself subject to various errors, it is useful to give a rough idea of the magnitude of the bias in the educational statistics. Thus, by making such

a comparison for India in 1961, A.K. Sen found that the number of students in the age-group 6-14 years according to educational statistics was more than 20 per cent higher than that of full-time students as reported in the census of that year. ^{4/} It would be highly desirable to improve the quality of the data, and particularly to use independent estimates of the student population from censuses and surveys as a further check on the educational statistics.

Of particular importance in this connexion is the phenomenon of educational wastage, especially in the first level, the subject of a careful analysis in the *Bulletin of the UNESCO Regional Office of Education in Asia*. ^{5/} This study concluded that "of about 30 million children enrolled each year in grade I in schools of the Asian region, fewer than 50 per cent are likely to complete in due time their first level of education; the rest will either repeat grade or withdraw from school before completing the primary cycle....The financial 'cost' of wastage in the region is estimated at US \$ 100 million per year....The financial cost of wastage varies from 2 to 25 per cent of the total education budget in the countries of the region." There are, therefore, important problems to be dealt with even at the quantitative level.

Even after allowing for the foregoing considerations, the expansion of enrolments in the 1960s was a considerable acceleration over past rates. In viewing the results of this expansion, there has been great concern over the deterioration in the quality of education that has accompanied the process. To some extent, the deterioration has been due to the very fact of rapid expansion. In country after country, underqualified teachers had to be pressed into service to meet the needs of growing enrolments, so that it has been alleged that education became subject to a law of "more means worse". ^{6/} Of course, this is not a universal law; the United Kingdom, for example, has embarked on considerable expansion to meet the targets of the Robbins Commission on Education, without loss of educational standards. In fact, the whole point of educational planning is to foresee such problems and, by taking suitable measures in advance, to see that these problems do not actually occur. The difficulty, however, has been that past efforts in educational planning have seen their task largely as one of quantitative expansion and, hence, relied on sufficient capacity in the teacher-training institutions as a guarantee for the maintenance of quality. One factor in the deterioration of quality has been that even this approach to planning was not implemented in full; educational expansion was often undertaken for political and other reasons, before an adequate supply of qualified teachers was available.

There were other problems that could not be fully taken into account in the planning of the 1960s. One was the question of the type of education that was to be expanded. In the years before the Second World War, because of its small coverage, the role of education was to serve a limited purpose of manning the various levels of the administrative and professional services. As the develop-

^{4/} A.K. Sen, *The Crisis in Indian Education* (Lal Bahadur Shastri Memorial Lectures, 1970).

^{5/} UNESCO, *Bulletin of the Unesco Regional Office for Education in Asia*, (Bangkok, 1967).

^{6/} M. Blaug, P.R.G. Layard & M. Woodhall, *The Causes of Graduate Unemployment in India* (London, Allen Lane, The Penguin Press, 1966) p. 37.

ing countries moved into various programmes of industrial, agricultural and commercial development, the relevance of the former, predominantly academic, education became suspect. A second factor was that a new generation of students was being drawn from homes of an entirely different social and economic background. Yet a third factor was that, in many countries, at least in the early stages of development, the teaching profession was not attractive enough to the more able persons, who found better opportunities of employment elsewhere, especially in the rapidly expanding administrative services of the newly independent national Governments. The realization of these factors affecting the quality of education, therefore, poses new problems for educational planning in the coming decades. What sort of education is needed for countries in the process of development? How can such education be provided to a growing student population without loss of quality? How can an adequate number of suitably trained teachers be attracted to the teaching profession?

Closely related to the foregoing is a second group of problems concerning the interaction between the educational system and the rest of the economy. To some extent, the philosophy which inspired the great expansion of education in Asian countries and elsewhere in the 1960s was that education was an end in itself, the means to a good life, i.e. in the language of economics, education is a consumption good. On this approach, the fact that developed countries provided more education for their people could be explained simply by the fact that they could afford more. As against this, there was also the widespread feeling underlying the expansion of education that this was somehow the means to economic and social development, which had, and still has, such a high place in the agenda of national policies of the developing countries. On this approach, education is a production good. The two views were not always clearly distinguished in the consideration of educational policies. As a result the rate and pattern of educational expansion that were followed was not closely related to the relationship between the educational system and the rest of society. The relationship was, however, prominent in the view of individuals. From the point of view of the individuals concerned, it is nowadays becoming increasingly apparent, the pursuit of education was based on hopes of personal economic advancement. As the output of the expanding educational systems began to find increasing difficulties in getting employment which they considered appropriate to their educational qualifications, educational planning has found it necessary to come to grips with the manpower implications. The manpower aspects have therefore come to represent the external principle by which to relate the planning of education to the economy as a whole.

There are a number of ways in which the manpower aspects of educational expansion came to the forefront of attention of planners, as a result of the experience of the 1960s. One of the problems was the question of what sort of jobs were available for them. There turned out to be very little guidance as to the educational requirements of various jobs and, in fact, even as to whether there was a stable relationship between various occupations and corresponding educational qualifications. The prevailing situation in the developing countries could not be taken as a standard because of the very limited spread of education in their past, and because of the rapid changes being brought about in their economies as a result of development measures. Nor did the past history of the

presently developed countries provide much guidance, because the early stages of development in these countries were not based on an extensive education of the labour force.

One result of this indeterminate relationship between education and occupation was the tendency for educational expansion in the rural areas to induce a more rapid rate of migration to urban areas. In the past, even primary education had been so much a characteristic of urban occupations and so little used or useful for rural occupations that the increasing numbers of primary school leavers tended to migrate to urban areas in search of employment. One of the important problems facing these countries is, therefore, to study this process of rural-urban migration in depth, to examine how far it is accelerated by the spread of education in rural areas, and to search out for policies, both within the educational system and in the economy as a whole, for reducing the flow of educated workers.

The process of migration coincided with a time when the pattern of economic development under way in these countries was such that it could not generate employment opportunities, especially in urban areas, at a sufficient rate to match the explosion in the labour force that began to appear in the late 1960s as a result of the demographic trends of the whole postwar period. In particular, the combination of educational expansion with the slowness with which employment opportunities were opening up created or threatened to create acute problems of educated unemployment. The problem becomes even more accentuated by the tendency of young unemployed workers at one level of education to pursue high levels of education in a bid to improve their employment prospects.

The extent of educated unemployment therefore turns out to be an important symptom of problems in the relation between the educational system and the rest of the economy. Some data about this problem as it occurred in the 1960s are summarized in tables 2-5.

Table 2: Unemployment as a percentage of economically active population:
Bangkok-Thonburi, Thailand, 1960

Highest grade completed	Unemployment rate
None	1.22
Primary 1-3	2.52
Primary 4	2.70
Secondary 1-3	4.25
Secondary 4-6	5.51
Pre-university 1-2	4.30
College	7.13
Graduates	1.19
Others	1.48
Total	2.89

Table 3. Unemployment rates, by education:
West Malaysia, 1967

Level of education	Unemployment rate
No schooling	4.1
Primary	7.3
Below lower certificate	14.0
Below school certificate	16.3
School and high school certificate	15.4
University	3.0 <u>a/</u>
Total	<u>6.9</u>

a/ Average for age-group 20-29 yr. only.

Table 4. Unemployment rates, by education and sex: India, 1961

Level of education	Urban			Rural		
	Male	Female	Male and Female	Male	Female	Male and Female
Illiterate	2.0	0.4	1.6	0.2	0.0	0.1
Literates	3.6	3.4	3.6	0.9	0.7	0.9
Matriculates	5.5	11.9	5.9)	7.6	26.2	8.4
Graduates	2.7	5.9	2.9)			
Total	3.2	1.5	3.0	0.5	0.1	0.4

Source: M. Blaug, P.R.G. Layard, & M. Woodhall, *op. cit.*, p.37.

Table 5. Unemployment rates: Indonesia - urban areas of Djawa-Madura, 1967

Level of education	Male	Female
No schooling	1.9	2.1
Primary school	2.8	4.9
General secondary	3.4	7.2
Special secondary	5.0	3.3
General high	2.4	-
Special high	-	2.2
Academy	1.5	-
University	-	-
Unknown	1.5	-
Total	2.4	2.8

Source: Socio-Economic Survey of Djawa-Madura, 1967.

There are difficulties in interpreting such data on unemployment. One of these arises from the application of the labour force approach to the measurement of the work force. This approach, specially designed for the conditions in the developed countries, raises problems when applied to the entirely different circumstances of the less developed countries, because of the predominance of the agricultural sector and the large seasonal fluctuations of activity in that sector. As a result, for example, measures of the labour force in the Philippines have shown considerable variation in the course of the year. Then, there is the distinction between the employed and the unemployed, which is a clear-cut one in countries which provide unemployment benefits on the basis of a legal definition, but which is vague in the developing countries of the region. Workers without full-time employment have still to do something for their living; a number of surveys have therefore tried to collect information on the hours of work done per week during the survey period, but the distinction between the employed and the unemployed is still a matter of judgement. Further, it is not quite appropriate to think of the problem of unemployment by analogy with the musical chairs game, with more players than chairs, corresponding to more job-seekers than jobs. Instead it is more useful to think of the unemployed as a sort of queue waiting to get into employment; the volume of unemployment, corresponding to the length of the queue, depends on a number of factors, such as the growth of demand and of supply, the working of the labour market, the rates at which wages and salaries adjust to changing conditions, and the extent to which individual job-seekers can hold out for what they consider to be jobs appropriate to their qualifications. To some extent at least, the rise in unemployment rates with level of education has to be ascribed to the greater holding power of those with more education. In spite of all these considerations, there are clearly signs that educated unemployment is becoming an important problem.

There is an important demographic point that must be remembered in connexion with the data on educated unemployment, indicating higher rates of un-

employment for the more educated workers. This point is that, owing to the recency of educational expansion, the younger cohorts are also progressively the more educated sections of the population. Therefore, the rates of educated unemployment reflect, to a considerable degree, the unemployment of the new entrants to the labour force, i.e. those seeking their first jobs; they are unemployed, not because they are more educated, but because they are still young. For example, 70 per cent of the unemployed in Thailand in 1960 and 60 per cent in India in 1961, were looking for their first jobs, and 45 per cent of the unemployed in the urban areas of Djawa-Madura in 1967 were aged under 24 years. This does not of course dispose of the problem, because unemployment among the younger, and the more educated, workers can lead to serious political problems, and in some countries has done so. Another feature to note is that with increasing education, women tend to be in the labour force to a greater extent, and to constitute a considerable part of those reporting as unemployed.

The manpower aspects of educational planning do not deal only with problems of surpluses leading to educated unemployment. There are still problems of scarcities of various categories of educated workers. In the early stages of educational planning, these shortages were thought of as mainly affecting high-level manpower. This gave a special impetus to programmes of expansion of higher education, especially at the universities. For a time, this served to supply graduates to replace expatriates and to provide for the rapid expansion of the administrative services of the newly independent nations. But as the scale of university facilities was rapidly expanded to meet this once-over increase in demand, it soon led to a high rate of supply of graduates for whom it became increasingly difficult to provide employment. Even so, countries still experience shortages of workers with special technological and managerial skills simultaneously with surpluses of graduates with a general and academic education. In the course of time, it was found that shortages were even more acute in certain categories of middle-level manpower.

These may be considered the short-term or medium-term problems that followed the rapid expansion of education. This has raised the question in some quarters as to whether, perhaps, the educational expansion of the past has been too rapid. Against this must, however, be posed the long-term aspect of the matter. Despite the rapid expansion that has taken place, the effect on the educational attainments of the labour force as a whole has been slow, indicating the long way the developing countries have still to go in reaching an educational quality of the labour force anything like that of the developed countries. Data on the educational qualifications of the stock of labour, as distinct from those of the flow of graduates from the educational system, are difficult to come by. This is one area in which it would be useful to obtain further information in the future. In the absence of such data, Angus Maddison has suggested a rough method of estimation, by which the average number of years per worker in 1950 is taken as 80 per cent of that provided in 1950, and that received by new entrants to the labour force during the period 1950-1965 is taken as the average of that provided in 1950 and 1965; it is also assumed that the new entrants constituted 40 per cent of the labour force in 1965 in the developing countries. ^{7/} On this

^{7/} Angus Maddison, *Economic Progress and Policies in Developing Countries* (London, Allen and Unwin, 1970), pp. 46-48.

basis, the progress of education in Asian countries is shown in table 6, together with comparative figures from some developed countries.

In making this comparison, it must not, of course, be assumed that a country's development or growth prospects depend only on the average number of years of schooling of its labour force. There is first the question of the quality of education that is provided in each year of schooling. There is, then, the fact that much of the technical skills most relevant to the increase of productivity are not acquired in class-rooms but rather by the process that has come to be known as "learning-by-doing" and on-the-job training. Nevertheless, it has been argued that success in these processes of skill acquisition depend on the amount of education that a person already possesses.

Table 6. Educational qualifications of the labour force (mean years of schooling)

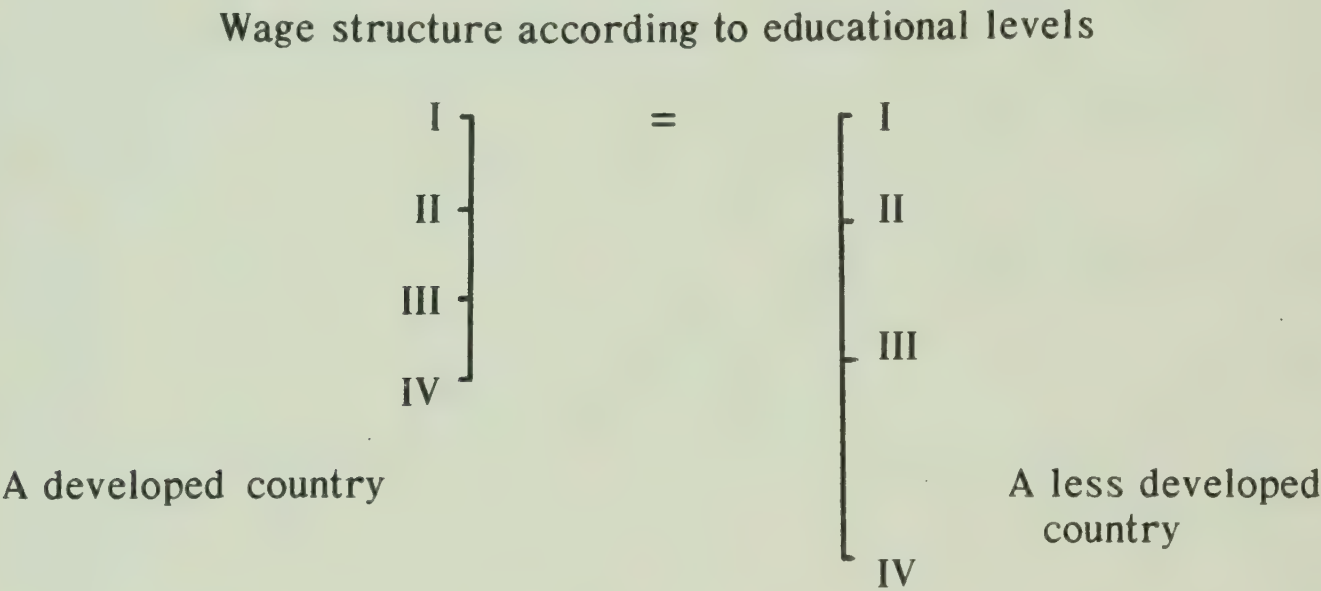
Region/country	Mean years of schooling
Developing ECAFE region: 1950	3.5
1965	4.4
if the Karachi plan	
target is attained by 1980	6.2
if followed up to 2000	8.1
Developed countries (c. 1960)	
United States	11.8
Japan	10.3
United Kingdom	10.2
Netherlands	9.9
France	9.8
Canada	9.6
Norway	7.6

Source: P.R.G. Layard & J.C. Saigal, "Educational and occupational characteristics of manpower — An international comparison," **British Journal of Industrial Relations** (1966) p. 266.

Finally, the amount of education needed depends to some extent on the sort of work that a person does. To the extent that the occupational distribution of the labour force differs in the developing countries from the developed countries, the educational requirements will also differ. Hence, projections of manpower requirements have tended to rely on the educational composition of different occupations, as observed in the present situation of the developing countries themselves, or borrowed from some developed countries. It is not, however, obvious that there is any such standard relationship for all countries, or that this relationship is or should remain stable over time. On the contrary, all indications are that, under modern conditions, the educational characteristics of dif-

ferent occupations are continuously being upgraded. Thus, for example, a higher educational level of agricultural workers is often considered necessary to take full advantage of the new technologies being introduced in several countries of the region.

On balance, therefore, one may state the task of educational planning to be to devise ways of maintaining high rates of progress towards the long-term goal of a well-educated labour force and at the same time solve the short-term problems which this raises in the way of absorption of the newly educated workers into productive employment. In order to fulfil this task, educational planning must focus on these problems of absorption. In doing this, perhaps, the most significant issue is that of the salary differentials among workers of different educational qualifications. It is found that these differentials are greater in the developing countries than in the developed countries. ^{8/} The situation may be illustrated as follows:



In this figure, the incomes of the highest-level I workers in the less developed country is placed at the same position as in the developed countries, as they would be if they were free to migrate in search of personal advancement. However, the lowest level IV workers have earnings determined by the relative affluence or poverty of their respective countries. As a result the salary differentials by educational standards in the less developed countries are greater than in the developed countries. In many countries, these differentials have persisted from former periods of scarcity, as in colonial times, when the needs of high-level manpower were met by expatriates. In the course of educational development, the differentials must narrow down. The question facing these countries is the speed of such adjustment. The problem has been posed by Sir Arthur Lewis thus: "One ought to produce more educated people than can be absorbed at current prices, because the alteration in current prices which this forces is a necessary part of the process of economic development."^{9/} Further, he says, "the process is inevitable, if painful and dangerous. It is painful because it requires that the young people coming out of schools and

^{8/} Samuel Bowles, *Planning Education System for Economic Growth* (Harvard, 1969) p. 221.
^{9/} W. Arthur Lewis, "Education and economic development," *Social and Economic Studies*, 1961, reprinted in UNESCO, *Readings in the Economics of Education*, (Paris, 1968), p. 137.

universities continually adjust their expectations downwards, and this is a frustrating experience. It is dangerous because this frustration may erupt politically.” ^{10/}

The problem of salary differentials has an immediate impact on the education system itself, because higher salaries of the more educated workers gets reflected in higher unit costs of education at the higher levels. The situation of unit costs of education in the ECAFE region is summarized in table 7.

Table 7. Unit recurrent costs of education in terms of per capita GNP in some ECAFE countries, c. 1965

Country	Unit recurrent costs			Total recurrent costs as a percentage of GNP
	Level I	Level II	Level III	
Afghanistan	17	127	730	0.9
Burma	15	33	227	2.8
Hong Kong	13	30	236	2.4
India	8	15	210	2.4
Indonesia	12	24	418	0.7
Iran	16	31	426	3.1
Khmer Republic	22	94	180	4.8
Korea, Republic of	5	13	109	1.8
Laos	30	304	501	3.1
Malaysia, West	16	30	426	3.9
Nepal	8	8	252	0.4
Pakistan	8	21	69	1.1
Philippines	18	47	66	3.3
Singapore	11	14	124	3.9
Sri Lanka	10	27	273	4.2
Thailand	11	28	258	2.7
Average ECAFE countries	12	23	193	2.25
Average 23 developed countries	17	18	72	4.42

Source: F.H. Harbison, Joan Maruhnic & Jane R. Resnick, *Quantitative Analyses of Modernization and Development*, (Princeton, 1970).

These results can now be used to analyse the differences in the ratio of educational expenditures to GNP between the countries of the ECAFE region and the developed countries. This is done in table 8. In this table, the populations at the three levels of education are taken as those aged 6-12 years, 13-17 years, and 18-21 years respectively. Population estimates and enrolment statistics are taken from the UNESCO Statistical Yearbook.

^{10/}W. Arthur Lewis, *Some Aspects of Economic Development* (University of Ghana, 1969), p. 23.

Table 8. Analysis of recurrent educational expenditure as a percentage of GNP

Level of education	Percentage age distribution	Enrolment ratios	Enrolment as a percentage of the population	Unit costs as a percentage of per capita GNP	Total costs as a percentage of GNP
(a) ECAFE countries					
I	18.52	52.39	9.70	0.12	1.13
II	10.30	24.65	2.54	0.23	0.59
III	6.99	4.06	0.28	1.88	<u>0.53</u>
Total					<u><u>2.25</u></u>
(b) Developed countries					
I	12.46	96.48	12.02	0.17	2.04
II	8.75	87.47	7.65	0.18	1.36
III	6.61	21.64	1.43	0.72	<u>1.02</u>
Total					<u><u>4.42</u></u>

The difference in the percentage of GNP spent on education between these two groups of countries may be attributed to three factors, namely, the difference in the age distribution of the population, the differences in the enrolment ratios, and the differences in the unit costs. The relative magnitude of the effects due to these three factors are shown in table 9.

Table 9. Differences in percentage of GNP spent on education between developed and ECAFE countries

Factor	Effect
1. Educational expenditures as a percentage of GNP in ECAFE countries	2.25
2. Difference due to:	
(a) demographic factor	-0.38
(b) enrolment ratio factor	+4.00
(c) unit cost factor	-1.45
3. Educational expenditures as a percentage of GNP in developed countries	=4.42

From table 9, it is seen that the main factor underlying the lower level of expenditure in the ECAFE countries is the lower enrolment ratios. As against this, these countries have a less favourable age distribution and higher unit costs. The unit cost factor is a significant one in making educational costs a heavier burden on ECAFE countries.

We have so far been considering education in relation to economic growth. There is, however, another important issue involved, namely the contribution of education to the reduction of economic inequalities. Such a reduction is one of the most cherished objectives in the national policies of the developing countries. In most of these countries, equalization is seen not so much in terms of equality of rewards, but rather in terms of equality of opportunities. In this, educational expansion has been seen as an important instrument, with the ideal of providing education for all to the extent that they can benefit from it. However, the equalizing power of educational expansion depends not only on the extent of such expansion, but also on the equality of educational opportunities themselves. From his study of a large number of countries, Lydall concluded that "societies in which education is more unequally distributed will exhibit a wider dispersion of earnings than those in which it is more equally distributed."¹¹ Therefore, side by side with planning the expansion of education, measures must also be taken to distribute educational opportunities more equally.

In the foregoing discussion, the population aspects have been taken as given and, hence, used to measure the dimensions of the problem of educational expansion. In fact, however, educational expansion is likely to have its own effects on population growth, especially by bringing about a reduction of fertility. Fertility differentials are becoming more and more noticeable according to differences in educational levels. The spread of education is, therefore, helping to put a brake on population growth. The full effects of this are not yet known, and can only be determined after the analysis of the 1970 censuses. It will then be possible to incorporate these demographic consequences of educational expansion more fully into future exercises in educational planning.

Directions for future policies

The future confronts educational planning with many tasks for study and for action. The new information that will be provided by the 1970 censuses has to be studied carefully to see its implications for educational planning. Changes in demographic trends have to be noted to revise and improve the population projections made with the far less adequate data of the past. In particular, one has to watch for the effects of the educational expansion of the 1960s on the demographic trends which were not fully anticipated. There are likely to be unanticipated differences in fertility patterns brought about by educational development. Another important factor to look out for is the rate and pattern of rural-urban migration, which also has important implications for educational planning. It is commonly held that the extension of primary education to rural areas has been an important factor in accelerating such migration. One has

¹¹/H. Lydall, *The Structure of Earnings* (Oxford, Clarendon Press, 1968), p. 257.

to watch also for the effects on labour-force participation. The whole question of the definition and measurement of the working population has to be re-examined. As unemployment threatens to become a major problem confronting the developing countries in the 1970s, more realistic methods of measurement have to be devised.

Given the population base, educational planning has to determine the quantitative issue of expansion of enrolments. In the past, this was largely determined in terms of desirable enrolment ratios. For the future, greater attention has to be given to the economic aspects. There are two main approaches being recommended and generally applied for this purpose. One, known as the manpower requirements approach, attempts to project the future GNP and, through it, the occupational distribution of the work force, and hence the required educational composition. Apart from the difficulties of making such projections, there is serious doubt about one of the key links in this argument, namely, whether there is any standard educational composition of occupations, and whether it is stable. It seems inescapable that as the developing countries progress with their educational expansion, there must be up-grading of educational standards in most occupations. The question needs careful study in the light of such new information as becomes available. The other approach, known as the rate of return approach, seeks to guide expansion at various levels of education according to the social rates of return to investment at each level. According to this school of thought, there has been overexpansion at the higher levels in many countries of the region, partly because private rates of return are different from the social rates, and have remained high.

As has been seen, part of the pressure to expand education at the higher levels has been due to the large salary differentials between different educational levels. Information on this subject has been rather limited, and an effort must be made to study the whole question in greater detail. If the differentials are found to be large, and to stand in the way of fuller absorption of the growing output of the educational system into the labour force, then measures have to be taken to adjust the salary structure, starting from the public sector.

A final point that needs to be considered is the role of educational development in promoting greater equality of income distribution. This acts in two ways: (a) in making access to educational opportunities more equally distributed among all sections of the people and (b) in reducing inequalities of income associated with inequalities of educational attainments.

TOPIC 5: FAMILY PLANNING PROGRAMMES

REVIEW AND ASSESSMENT OF MAJOR POLICIES AND PROGRAMMES IN FAMILY PLANNING IN THE ECAFE REGION

by

the ECAFE secretariat

During the First United Nations Development Decade, 1961-1970, two-thirds of the ECAFE member countries adopted family planning as a national policy. The main reason for Governments adopting family planning as a national policy is basically economic: to alleviate the consequences of the imbalance between rapid population growth and the limited resources available for improving levels of living.

The region as a whole is characterized by a high rate of population growth, high density and a high dependency ratio. Most of the countries in the region are facing serious problems of poverty, unemployment and under-employment, undernutrition, illiteracy, substandard housing, poor medical care and inadequate educational facilities.

With these difficulties and problems, Asian countries are going through a process of modernization, of transforming traditional agricultural economic systems, of providing adequate food, shelter and clothing to the people, of improving education and health care, and of harnessing modern communication to inform and stimulate people for better living.

Although most countries continue to make considerable progress in economic and social development, rapid population growth has been reducing the benefits of this progress. Such rapid population growth results from the demographic gap between sustained high fertility and declining mortality in this region.

This paper reviews and assesses the status of national family planning policies and programmes in the ECAFE region and deals mainly with the governmental programmes with demographic targets.

Family planning policy and goals

As of 1971, 25 of the 31 member and associate member countries of ESCAP located in the region had either official population or family planning policies with national programmes or supported family planning activities in the country, as shown in table 1. More than 95 per cent of the region's population live in these 25 countries.

The reasons cited for adopting family planning as a national policy are given in table 2, the most common being: (a) economic betterment of the people; (b) social development, particularly in terms of education of the younger generation; and (c) improvement of the health of mothers and children.

Table 1. Member countries in the ECAFE region, classified according to fertility level and to the Government's position on family planning (as of 1971)

Fertility level	Government's position on family planning		
	Stated policy with programme <u>a/</u>	No stated policy, but Government supports or permits activities	No stated policy or Government-supported activity
Low		Australia Japan New Zealand	
Declining	China (1962) <u>b/</u> Fiji (1962) Korea, Republic of (1961) Malaysia (1966) Singapore (1965) Sri Lanka (1965)	Hong Kong	
High	India (1952) Indonesia (1968) Iran (1967) Nepal (1966) Pakistan (1960) Philippines (1970) Thailand (1970) Tonga (1969) Western Samoa (1971)	Afghanistan British Solomon Islands Cook Islands Laos Papua New Guinea Viet-Nam, Republic of	Bhutan Brunei Burma Khmer Republic Mongolia Nauru
Percentage of the region's population residing in the countries	89.4	8.5	

a/ Figures in parentheses indicate year of policy formulation regarding population or family planning.

b/ Source: Population and Family Planning in the People's Republic of China, The Victor-Bostrum Fund and the Population Crisis Committee, 1971.

Table 2. Reasons for adopting family planning population policies, ECAFE region as of 1970 a/

Reason cited	Number of policies
Demographic condition	9
Economic	18
Health/Maternal and child health	8
Social	11
Political	0
Ecological/environmental	0

a/ Based on the classification scheme suggested by Bernard Berelson in his "Population policy: personal notes," Population Studies, XXV (July 1971), pp. 173-182. The analysis includes only those policies compiled in **Governmental Policy Statements on Population: An Inventory**, (ESA/P/WP.5/Rev.2), 20 July 1971, p.9. It should be treated as suggestive rather than definitive.

Historically, a certain pattern of national family planning policy formulation is discernible in the ECAFE region. In the 1950s, family planning was advocated by individuals and voluntary groups concerned to advance maternal and child health or women's welfare. The early advocates stimulated the public concern over the unfavourable health effects of the excessive number of conceptions and abortions. In the 1960s, the governmental leaders, especially the economic planners, became interested in fertility control in order to facilitate economic and social development. The governmental interest and involvement in fertility control was further augmented by growing world-wide concern over increasingly urgent problems related to human rights and modernization of the ECAFE countries.1/

In the majority of the countries with official family planning programmes in the region, the goals have been expressed in demographic terms: as a reduction in either the crude birth rate or in the rate of natural increase. Table 3 gives demographic goals for 10 countries of the ECAFE region.

1/ "Factors leading to adoption of family planning population policy in the ESCAP region," a paper to be presented at the Interregional Workshop on Population Action Programmes, November 1972, Manila, Philippines (ESA/P/AC.1/11).

Table 3. Demographic targets of national family planning programmes in selected countries of the ECAFE region a/

Country	Item <u>b/</u>	Level <u>c/</u>
India	CBR	From an estimated 39 in 1968 to 32 by 1973/74 and 25 in another 5 to 7 years (1972)
Indonesia	CBR	Decrease level unspecified
Iran	NI	From 3% in 1967 to 2% (year unspecified)
Korea, Republic of	NI	Decrease to 2% by December 1971
Malaysia	{ NI	Decrease to 2% by 1985 } (1972)
	{ CBR	From 38 in 1965 to 26 in 1985 }
Nepal	NI	Decrease to 2% (year unspecified)
Pakistan	CBR	From 41 to 43 in 1970 to 33.2 in 1975
Philippines	NI	Reduction from an estimated over 3% in 1971 to 2% in 1976 (1972)
Singapore	CBR	From 32 in 1964 to 20 in 1970
Thailand	{ NI	to 2.5% by 1976 (1972)
	{ CBR	From an estimated 41 in 1972 to 33 in 1976

a/ Adapted and updated from Dorothy Nortman, "Family planning programmes of developing countries", table 1, **Population Studies**, vol. 26, No. 1, March 1972.

b/ CBR = crude birth rate; NI = rate of natural increase.

c/ Targets as of 1970, unless otherwise specified.

Table 4. Family planning acceptance targets in selected countries of the ECAFE region a/

Year <u>b/</u>	India (millions) Sterili- zation	Conven- tional contra- ceptives	Indo- nesia (thou- sands)	Republic of Korea (thousands) Sterili- zation	IUD <u>c/</u>	Pills <u>d/</u>	Condom <u>d/</u>	Malay- sia (thou- sands)	Nepal (thou- sands)	Philip- pines (thou- sands)	Singa- pore- <u>e/</u> (thou- sands)	Thailand (thousands) Pills IUD Sterili- zation
1969	2.2	2.4							16			
1970	2.6	4.8							18			
1971	3.0	7.0	200					80	35		16	
1972	3.4	9.0	550	20	300	250	150	100	60	581	16	235 90 25
1973	3.8	10.4	1000	25	350	260	160	120		738	16	280 90 30
1974			1700	25	350	280	170	140		836	16	280 90 35
1975			2500	25	350	300	180	160		727	16	280 90 40
1976				25	350	320	190			594		280 90 40

a/ Latest available for five-year plan periods. The figures are taken from a working paper based on a comparative study of family planning service statistics systems now being undertaken by ECAFE.

b/ Calendar year corresponding to 50 per cent or more of the fiscal year for which targets are set..

c/ Includes reinsertions.

d/ Average monthly number of users during the year.

e/ Sterilization targets not included; 5,000 - 7,000 sterilizations estimated for 1972.

Several countries have attempted to convert the demographic goals into intermediate operational targets (e.g. annual acceptors targets), as shown in table 4.

Both demographic and acceptor targets have undergone repeated changes in several countries as additional information on the feasibility of achieving them has become available. Along with acceptance targets, most of the nations have been able to work out operational goals for concomitant efforts needed for achieving targets. A few of these goals, e.g. dissemination of family planning information and achievement of increased motivation, are given in broad terms, while others, e.g. those regarding personnel, training, service, supplies and opening of new clinics, are given in more precise terms. With these "intermediate" objectives serving as a frame of reference, various family planning programmes have been designed and implemented.

Review of programmes

Administration of national family planning programmes in the ECAFE region is usually entrusted to an existing executive department, such as the ministry of health, or falls under the responsibility of a new independent agency in the form of a commission or board which is outside the regular executive branch of government but directly under the chief executive. Most of the countries have adopted the first type, but the second type seems to be prevalent in those countries where non-governmental family planning activities have been and continue to be prominent, as in Malaysia and the Philippines. The task of the commission or board in these countries is not only to formulate the national family planning programmes but also to co-ordinate the activities of the various organizations participating in the national programme. At least one country in the region has left the responsibility of organized family planning activities essentially to a private agency with its tacit support.

The programmes under ministries of health are mainly executed as an additional task undertaken by the public health network and personnel and, in particular, through the facilities of maternal and child health services. Some countries are trying to integrate family planning into the health services. Generally, the ministry of health is assisted by other departments, such as the ministry of education or social welfare, or both, and community development agencies, as well as by private family planning agencies, especially in the field of training, motivation and information.

To give further encouragement to family planning acceptance, some countries have removed legal obstacles or liberalized them, for instance by revising the legal provision to allow the importation, manufacture and supply of contraceptives. Recently, abortion has become legalized in some countries, although it is not to be regarded as an alternative for family planning. In a number of countries, e.g. Singapore, the legal basis for surgical sterilization has also been provided.

(a) Provision of services

(i) Contraceptive methods

The contraceptive methods used by the national programme during the last

ten years have been mostly limited to four methods: sterilization, condom, IUD and pills. The relative adoption of different contraceptive methods varies between countries and over time within a country. By and large, there have been three phases in the adoption of contraceptive methods in most of the national programmes. In the first phase, or before 1964, national programmes depended on traditional methods, mainly condoms. However, with the introduction of the IUD in 1964, many countries adopted this method as a mainstay in their mass programmes. In 1968, the pill became available at a reasonably low cost and became another major contraceptive method in the region. India is the major exception, relying on sterilizations throughout the past decade.

(ii) Operational units

The operational units for the delivery service of clinical contraception, such as IUD and vasectomy, are usually based on the utilization of the existing medical and health facilities, such as hospitals, health centres, or maternal child health clinics. Especially in the post-partum programme, maternity hospitals or general hospitals with delivery services are used. General private practitioners and specialists in obstetrics and gynaecology (OBGY) are also designated to participate in the national programmes in a few countries. The delivery system also includes a follow-up scheme which not only offers free regular check-ups at the clinic or by home visit, or both, but also free treatment of side-effects or complications following IUD insertion or vasectomy operation.

To extend the contraceptive services beyond the clinical setting, various other facilities have been used. These include subclinics or subcentres located in community centres or railway stations, as in the vasectomy programme in India. They also include mobile services through various transport means and village or satellite clinics where a team of doctors and nurses is periodically sent to provide service. They also include utilization of local community leaders, systematically, in the educational aspects of the programme. Recently, vasectomy services have been offered through camps organized by the local community as a whole. In this effort to extend family planning services to socially and geographically remote areas, para-medical personnel in some countries, e.g. Pakistan and Thailand, have played an important role in clinical work, such as IUD insertions and prescription of contraceptive pills.

The non-clinical contraceptive methods, such as condom and foaming tablet, are supplied not only at the authorized family planning clinics but also through such channels as mail distribution, home delivery and subsidized sales. Government supplies are also distributed through village organizations, such as mothers' classes or farmers' co-operatives, which establish supply depots for the distribution of contraceptives at subsidized cost to their members, or through village leaders serving as depot holders. Income through such sales has been used for maintaining the activities of various welfare organizations, including family planning. In some countries, the supply and distribution of the non-clinical contraceptives are also channelled through large commercial market enterprises or through retail outlets, such as shopkeepers, pharmacists, barbers and stationery stores.

(iii) Fees or incentives

Most of the national family planning programmes do not charge the clients for services when these are rendered through programme facilities, except when the service is rendered through the private sector. If fees are charged, they are generally cents US 10-30 for condoms (dozen), cents US 11-34 for pills (per cycle) and cents US 22-40 for IUD insertion.

In a few countries, e.g. India, Pakistan and the Republic of Korea, monetary incentives are offered to acceptors to compensate for their loss of earnings resulting from a vasectomy operation or the side-effects of other methods. While the monetary incentives scheme to motivate people to accept a family planning method is now being tried in several countries, there is still a need to study its effectiveness and advantages for the national programme.

(b) Provision of information

Family planning programmes in the region use various means and media to disseminate information and convey messages advocating the need for family planning to target populations. There is relatively little variation in the content of messages used by the various programmes, although some cultural differences are reflected in their ways of presentation. The benefit of family planning in terms of health, education and quality of family life has been the main theme. Recently the concept of zero population growth has been emphasized through such messages as, "Stop at two!" In addition to the couples in the reproductive age, the target population has included political leaders; administrators; community leaders; organized groups, such as armed forces, labour unions and women's clubs; academic and professional persons; media persons; and family planning workers.

There is evidence from several ECAFE countries that mass media have encouraged the practice of family planning as well as contributed to increased knowledge of and changed attitude towards contraception. Of the mass media, the radio has been found the most effective and has been increasingly used during the past few years.

In addition to mass media, personal communication has been extensively used in the region, especially where mass media facilities are not well developed. The agents of the "face-to-face" communication programme in family planning are sometimes acceptors themselves, canvassers, community leaders and sales agents of various commodities. These people, acting as opinion leaders, have stimulated potential acceptors to actually adopt family planning.

Concerted use of all available media would conceivably be most effective, as demonstrated by family planning campaigns which mobilize all the media available. There is still a need to discover the optimal combination of various media which is most effective and economically, technically and culturally feasible.

(c) Personnel and training

With the massive expansion and intensification of the programmes, various

categories of personnel with different backgrounds and qualifications are required to perform the necessary functions in contraceptive delivery services; in information, education and communication activities; in field activities to recruit and follow up clients; in training of family planning workers; in evaluation and research; and in the administration of the programme.

During the last decade, ECAFE countries have mobilized at least 644,000 persons to provide contraceptive and information services. This number comprised 19,600 doctors, 130,900 nurses and midwives and 493,500 field workers and assistants.^{2/}

Efforts have been made also to utilize existing health personnel multi-purposely. Different categories of health personnel have been assigned to perform family planning functions in addition to their routine work. Certain functions, such as IUD insertion and/or pill prescription, which are normally performed by the medical doctors, are delegated to para-medical personnel in some programmes. Local influential people and village women are also mobilized, after some training, for recruiting and retaining acceptors as well as for referral work and distribution of contraceptive supplies.

As a way of attracting and retaining suitable persons for family planning work, some countries in the region have instituted a system of special compensation or incentive scheme for professional and lay family planning workers, especially in recruiting and serving clients on a fee-for-referral basis.

Despite an increasing number of personnel involved in national family planning programmes, the lack of qualified personnel remains a major problem. In order to remedy this problem, various types of training courses, short-term or long-term, have been conducted. The training facilities have also been expanded in some countries. The training of trainers or supervisors has become more and more important as the programme expands rapidly.^{3/}

(d) Cost

ECAFE countries have budgeted approximately \$US260 million from their domestic and external resources for their national family planning programmes. Annual average cost per capita ranges from cents US 3 to 20 with the median around 5 cents. The corresponding average cost per married woman is estimated at about 35 cents.^{4/} The proportion of governmental contribution to the total programme cost varies considerably from country to country, probably indicating the extent of governmental commitment to family planning. Only a few countries in the region are self-sufficient in their programmes.

Recently, there has been increasing interest in the cost-benefit and the cost-effectiveness aspect of family planning programmes. Many studies suggest that

^{2/} D. Nortman, *Population and Family Planning Programmes: A Factbook*, Reports on Population/Family Planning, No. 2, Population Council, June 1971, pp. 26-28.

^{3/} "Training of personnel in family planning programmes—Report of a Working Group" (POP/TPFP/1).

^{4/} B. Berelson, "The Present State of Family Planning Programmes," *op. cit.*, pp. 4-5.

the costs of national family planning programmes are low when compared with the presumed benefits and are well within the calculated economic value of a slow rate of population growth.^{5/}

Follow-up surveys of acceptors of IUD and pills have been conducted at local or national levels, or both, in all countries where these methods are used extensively. National samples of pill or IUD acceptors have been followed up in several countries, including the Philippines, Thailand, Malaysia and the Republic of Korea. Small-scale follow-up surveys of acceptors of condoms and the rhythm method have also been conducted in a few countries.

Information on fertility and KAP has been collected through a large number of sample surveys in the countries of the region. Most of these surveys have been confined to local areas or large cities, and have shown considerable variation in content, area of emphasis, sample size and methodological rigour. During the past ten years, however, eight countries of the region have had at least one KAP survey, using a national sample and eliciting responses on fertility and family planning at the instance of the Government or with its support (table 5).

Table 5. Major surveys using national samples in which information on fertility and KAP were obtained in countries of the ECAFE region.

Country	Year of study and agency
India	1960/61 (National Sample Survey — urban sample only) 1970/71 (Operations Research Group, Baroda)
Iran	1969 (Statistics Department, Ministry of Health)
Korea, Republic of	1964, 1965, 1966, 1967, 1968, 1971 (Korean Institute of Family Planning)
Malaysia	1966/67 (National Family Planning Board and Dept. of Statistics) 1971 (National Family Planning Board and Dept. of Statistics)
Pakistan	1968 (Pakistan Family Planning Council)
Philippines	1969 (University of Philippines (UP) Population Institute) 1972 (Institute of Mass Communications, UP — sponsored by ECAFE)
Thailand	1969/70 (Institute of Population Studies, Chulalongkorn Univ.)
Singapore	1972 (University of Singapore — sponsored by ESCAP)

There is a need to make further assessment of the impact of family planning programmes, especially to justify the cost of the programme. ECAFE countries with national family planning programmes have been increasingly cost-conscious

^{5/} For example, see W. Robinson, et al., "A cost-effectiveness analysis of selected national family planning programmes", (mimeographed) AZD, 1969; and G. Simmons, *The Indian Investment in Family Planning*, (New York: The Population Council, 1971). Robinson estimated the range of costs per couple-years of protection to be between two and six dollars. Simons found, in calculating benefit-cost ratio, that "the value of a total pay-off, that is the par value of all future births averted by an annual cohort acceptor, was found to be 40-50 and in one year (1967/68), as high as 88 times the annual programme costs."

in order to yield maximum results with minimum cost and to maintain continuity of support for the family planning effort.^{6/}

(e) Evaluation schemes

The family planning programme evaluation schemes used in countries of the ECAFE region fall broadly under four different categories: (i) assessment of programme progress through recording and reporting systems built into the programme, (ii) estimation of contraceptive use-effectiveness through follow-up surveys of acceptors, (iii) estimation of extent of change in family planning knowledge and practice (KAP) as well as other relevant information regarding the general population through cross-sectional surveys and (iv) assessment of the demographic and economic impact of the programme through analytical studies using family planning service statistics in conjunction with data from other sources.

In **service statistics**, the countries with national family planning programmes have adopted different systems of recording and reporting family planning activities. Recording of family planning service statistics is basically done at the individual clinic level, and generally includes acceptance data, follow-up information and acceptor characteristics. There is relatively less uniformity among countries with regard to the reporting system. In large countries, such as India and Pakistan, the reports are consolidated at one or more intermediate administrative levels, whereas, in smaller countries, clinic activities are reported directly to the central tabulation units, thus avoiding intermediate stages to a large extent.

A growing tendency toward simplifying the recording and reporting systems so as to spare workers at the peripheral level from the burden of filling out too many forms is observable in all countries. Some countries, such as Indonesia and the Philippines, have been trying to expedite the process of analysis and feedback through the use of computers.

Analytical studies using family planning statistics as well as data from other sources include computation of births averted, reduction in the birth rate and the consequent effect of the family planning programme on future population growth. Such studies have been made in several countries, including India, Malaysia, Pakistan, the Republic of Korea and Thailand. Another kind of study is that of cost-benefit and cost-effectiveness analysis of family planning programmes. To test innovations in programmes implementation, several types of action-oriented research and field studies are going on in almost all the countries of the region which have family planning programmes.^{7/} Studies of integration of family planning and maternal and child health in Indonesia and Malaysia, study of a special incentive scheme in south India, use of para-medical personnel for oral pill distribution in Thailand and Malaysia, field trials of new contraceptives, special family planning campaigns and so on, have been conducted.

^{6/} See "Report of the expert group meeting on socio-economic returns of family planning programmes (June 1972)", (POP/APC.2/BP/8).

^{7/} See J. Ross, et al., "Findings from field research", Population/Family Planning, August 1972.

(f) Programmes capacity

Although ECAFE countries with national family planning policies have been making noteworthy achievements in implementing their policies, major problems of organization and administration remain. The task of programme implementation is, as mentioned earlier, vested in those executive branches which are not necessarily strong politically and administratively. Because of the magnitude and complexity of the task, there are also problems in co-ordination of participating agencies, management of various kinds of personnel at different administrative levels and in different geographic areas, and financial and supply management.^{8/}

Programme achievement

(a) Acceptors

During the last decade, national programmes in the ECAFE region provided various contraceptive services cumulatively to a total number of approximately 36 million married women in the reproductive age group (15-44 years). This implies that, on an average, the national programmes recruited 3 or 4 new acceptors annually out of 100 eligible women, especially during the recent programme period (1965-1971).

When programme achievement is examined in terms of annual acceptor recruitment,^{9/} there are remarkable increases in the number of new acceptors in recent years in the countries with younger programmes, such as the Philippines, Indonesia and Thailand. However, in countries with older programmes, such as Hong Kong, Malaysia, the Republic of Korea and Singapore, the number of programme acceptors seems to be reaching its plateau. This trend of levelling-off suggests both saturation effect and the need for further programme development as well as for new contraceptive technology.

(b) Continuation rate

As of the end of 1971, the proportion of eligible couples who ever used contraception reached levels higher than 40 per cent in a few countries of the region. Table 6 provides data on acceptance and use of contraception in selected countries. The main problem appears to be low rates of continuation of contraceptive practice by the couples after initial acceptance. The continuation rate of modern methods, such as IUD and pills, is by no means satisfactory. IUD continuation rates at the end of 12 months in most programmes are between 62 and 77 per 100 acceptors, while the pill continuation rates at the same time interval are between 32 and 64 per 100 acceptors. Thus, the number of continuous contraceptive users in the region is fairly small, despite a rather impressive cumulative number of acceptors.

Assessment of programme and policies

In assessing the programme and policies, the following questions related to the impact of the programme are examined:

^{8/} Berelson, op. cit., p. 3.

^{9/} S. Keeny, "Efforts, achievements and problems of Asian family planning programmes" (POP/APC.2/IP/18), August 1972, in particular pp. 18-20.

- (a) whether such programme efforts (input) are related to programme acceptors (output) and, if so, whether such relationship is influenced by the socio-economic conditions in the countries;
- (b) to what extent such programme acceptors contributed to the fertility reduction; and
- (c) whether the countries with national family planning programme have actually had a declining trend in fertility over the years.

Studies indicate that in those countries where there are stronger, extensive family planning efforts and ready and easy availability of contraceptive services and information through the public and private sectors, the acceptance rates tend to be higher. For instance, the number of acceptors is highly correlated with manpower input, as estimated by the number of personnel-years of family planning workers deployed in the programme.^{10/}

There is also evidence that, in countries with national family planning programmes, social, economic and health conditions do seem to bear some relation to level of contraceptive use. For example, one study indicated that 1970 contraceptive acceptance and use levels are highly correlated with socio-economic indicators, such as percentage of population residing in urban areas, female life expectancy at birth, infant death rate, estimated daily newspaper circulation and adjusted school enrolment ratios.^{11/}

A study in the Republic of Korea indicated that, out of an over-all decline of about 30 per cent in the total fertility rate during 1960-1968, the component of age at marriage accounted for 12 per cent, the component of abortion for 6 per cent and the family planning component for 11 per cent.^{12/} Thus, the family planning programme is responsible for only one-third of the decline in fertility.

Crude birth rates have to be correlated not only with the level of acceptance and continued use of contraception, but also with the proportion of married women in the reproductive ages.^{13/} This reduction in crude birth rate is achieved not only by a reduction in marital fertility (through contraceptive use and other means) but also by a reduction in the proportion of married women in the reproductive ages which is generally influenced by other socio-economic variables in a given country.

The programmes seem to have had a widely differing impact on the fertility level in the countries. Apart from countries with younger programmes, such as Malaysia, the Philippines and Indonesia, the countries with national programmes in operation for seven or eight years can be classified under two categories in terms of fertility trend: (a) those wherein significant trends of decline

^{10/}B. Berelson, op. cit., p. 5.

^{11/}Lapham & Mauldin, op. cit., pp. 34-35.

^{12/}W.B. Watson, "Demographic problems confronting Korea's family planning programme," paper presented at National Family Planning Evaluation Seminar, Seoul, November 1971.

^{13/}Potter & Rao, "Future family planning impact: method and data requirement," paper presented at the Second Asian Population Conference, Tokyo, November 1972.

Table 6.
New acceptors in national programmes, by method and year
(in thousands, rounded)

Country and year	Number of acceptors in the calendar year specified				
	All programme methods	IUDs	Oral pills	Sterilization	Others
Hong Kong					
1965	36	30	1	0	6
1966	23	14	2	0	8
1967	19	9	3	1	6
1968	26	6	12	1	7
1969	31	4	19	1	7
1970	30	3	20	1	6
1971	30	2	21	0	7
India					
1965	...	495	...	460	...
1966	...	972	...	778	...
1967	...	728	...	1,544	...
1968	...	547	...	1,820	...
1969	...	469	...	1,755	...
1970	3,745	471	...	1,320	1,954
1971 (April, 1971- March, 1972)	4,851	473	...	2,144	2,234
Indonesia					
1967	6	6	0	0	0
1968	25	14	7	0	4
1969	30	23	11	0	7
1970	132	60	52	0	20
1971	419	171	206	0	...
1972 (5 months)	253	116	147	0	...
Iran					
1967	21	15	6	0	0
1968	63	10	50	0	3
1969	234	12	218	0	4
1970	229	8	291	0	...
1971	385	14	371	0	...
Korea, Republic of					
1964	267	112	0	0	155a/
1965	437	233	0	13	191
1966	568	380	0	19	169
1967	476	305	0	19	152
1968	489	263	75	16	135
1969	542	286	148	15	93
1970	646	295	171	17	163
1971	671	292	199	19	161
1972 (3 months)	...	82	...	6	...

Table 6.
(continued)

Country and year	Number of acceptors in the calendar year specified				
	All programme methods	IUDS	Oral pills	Sterilization	Others
Malaysia					
1967	21	1	19	1	1
1968	75	1	69	3	2
1969	71	1	66	3	1
1970	56	1	50	4	1
1971	55	1	48	4	2
Nepal					
1966	1	1	0	0	0
1967	6	3	1	0	2
1968	15	1	2	2	10
1969	27	1	11	4	12
1970	32	1	12	4	15
Pakistan					
1965	148	38	0	1	109 ^{b/}
1966	1,049	483	0	29	537
1967	1,931	675	0	152	1,104
1968	2,887	865	7	415	1,600
1969	3,242	739	5	398	2,100
1970	1,908	469	0	194	1,245
Philippines					
1966	8	2	3	0	4
1967	24	9	9	0	6
1968	43	13	23	0	7
1969	85	15	43	0	27
1970	200	45	114	0	41
1971	385	77	230	...	78
1972 (3 months)	...	19	85	...	...
Singapore					
1965	10	1	3	1	5
1966	31	3	14	1	14
1967	32	0	19	1	12
1968	36	4	19	1	12
1969	36	1	18	1	16
1970	26	1	12	2	11
1971	21	0	9	4	8
Sri Lanka					
1966	15	9	2	3	1
1967	37	18	9	4	6
1968	48	21	16	5	6
1969	56	19	25	3	8
1970	55	16	27	5	8

Table 6.
(Continued)

Country and year	Number of acceptors in the calendar year specified				
	All programme methods	IUDs	Oral pills	Sterilization	Others
Thailand					
1965	22	22	0	0	0
1966	28	28	0	0	0
1967	33	33	0	0	0
1968	57	35	10	12	0
1969	130	54	60	15	0
1970	225	74	132	19	0
1971	404	86	295	23	0
1972 (6 months)	245	46	184	15	0

... = Unknown.

a/ Mostly condoms and since 1967 entirely so.

b/ Condoms and foaming tablets, with former rising in recent years.

in birth rate and total fertility rates have been achieved but where an incipient fertility decline was already evident at the time of introduction of family planning programmes, and (b) those where no declining trend in fertility has yet been observed and where there was no incipient fertility decline at the time of introduction of the programme. The Republic of Korea and Singapore are examples of the first group, while India and Pakistan are examples of the second.

The above pattern of fertility trends and programme impact may suggest that fertility decline is associated with, if not caused by, the process of socio-economic development. This supports a proposition that "public family planning programme can be seen as an important and 'natural' part of the demographic modernization process... i.e. falling fertility, to be a concomitant of all-around modernization and economic development". 14/

14/H.M. Raulet, "Family planning and population control in developing countries," *Demography*, Vol. 7, No. 2, May 1970, p. 216.

EFFORTS, ACHIEVEMENTS AND PROBLEMS OF ASIAN FAMILY PLANNING PROGRAMMES*

by

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of the Population Council

The specifications for this paper are that it should not be a country-by-country review, which will be provided by others, but "a concise regional synthesis of the efforts, achievements and remaining problems of the programmes active in the region."

Thus we have to examine family planning among about 1,700 million people or 45 per cent of all the people on earth. One's first impulse is to say only that most of the Asian countries in the ECAFE region have family planning policies and varying degrees of activity.

A second glance at the list of countries shows that more than three quarters of the more than 1,700 million people live in two countries: China, with at least 750 million and India with 550 million. More than 200 million more live in Japan and Indonesia. The rest are mostly found in the Republic of Korea, the Philippines and Thailand, with from 30 million to 37 million each. Of all the countries with 20 million or more, Burma is the only one without a family planning programme and policy.

The information available about the country programmes varies enormously. Some countries do not take a census regularly. In others, the statistics of births and deaths officially reported represent gross under-registration and have to be corrected by estimates, which are also not always dependable. In general, however, the picture is one of death-rates falling largely because of the gradual conquest of communicable diseases, especially malaria. Birth-rates are usually falling too, mostly in the countries that are modernizing fast, especially where industrialization is accompanied by a strong family planning programme, as in the Republic of Korea. On the other hand, because of the increasingly large numbers of highly fertile young women of marriageable age, the fertility rate is rising in many countries among women under 30 yr and especially so among those under 25 yr. In several large countries there is no evidence that the crude birth rate is falling at all — but there is evidence that the death-rate is falling.

One pressure that is helping lower the birth-rate is the increasing age at marriage. This is clearly evident in the Republic of Korea and apparently (although statistics are not available) in China. This delay of marriage comes regularly with a rise in education or as a result of community pressure.

One thing is clear: the Asian nations of ECAFE have made more progress

* The opinions expressed in this paper are the author's own and do not necessarily reflect the views of his organization or those of the ECAFE secretariat or of the United Nations.

in family planning than any other region. One reason is that the religious and cultural backgrounds do not, as had been feared, provide an insuperable obstacle. Successful programmes are operating in Buddhist, Hindu and Muslim countries. The only country where Catholic Christianity is dominant is the Philippines. Even there, the high annual growth rate of about 3.45 per cent has led to a presidential proclamation in favour of family planning, followed recently by the necessary legislation.

Methods most used

In terms of volume, measured by acceptors of all contraceptive methods, most of the progress has been made in the last seven years. The methods have been limited mostly to four, which are listed in order of magnitude of use in Asia:

- (1) Sterilization
- (2) Condoms
- (3) Intra-uterine devices
- (4) Oral pills.

This order is sharply different from the pattern in the West, where oral pills usually come first.

Oral pills were little used in the early 1960s but their use has spread rapidly since the price was lowered about four years ago. The United States price fell to less than 20 cents a cycle two years ago but has now risen to about 35 cents. Pills of the same quality can still be bought in Europe for about 13 cents. This lowering of price only made pills more readily available. Whether they were used depended on whether the country's medical advisers approved of them, whether the women preferred them and whether there was an adequate network of doctors to prescribe them and of channels to distribute them.

Programmes grew slowly

The massive government programmes have developed mostly in the past seven years. But before that there were many years of effort by the voluntary agencies. To them belongs great credit: they demonstrated, often in isolated and ill-supported clinics, that plenty of couples wanted help; that it could be given at reasonable cost, and that the methods available made it possible for couples to have only as many children as and when they wanted them. Accumulating medical evidence showed further that the mother's health would be improved by avoiding pregnancies after many births and late in her reproductive life. Common sense told the people that, if the children were fewer, the smaller number could eat better and have a better chance for more education. Without the demonstrations by voluntary organizations, it is doubtful whether many of the present national programmes would have started.

Even then they did not start automatically. The most conservative Governments were not willing to take any chances of "backlash." Until there was an official policy, some of them refused to anticipate legislation by allowing family planning advice and services to be given by a government employee or even

to allow voluntary agencies to use government premises for the occasional clinic session. Other countries, generally reluctant to commit themselves, permitted pilot projects to be operated under the sacred name of research, but with the proviso that all the costs were to be borne by somebody else. Here the funds of the International Planned Parenthood Federation (IPPF), the Swedish Government (SIDA), the Pathfinder Fund, and the Population Council came in handy. In several small countries, these "pilot projects" covered much of the country before there was any government policy.

Policies precede budgets

Even with all these cautious beginnings, it was often much easier to get a national policy announced than to get money into the budget to support it. In such cases the timely availability of funds, first from the Swedish Government in several countries and latter from the United States Agency for International Development (USAID) in many more, helped to get things started. Without such help it is doubtful whether the programmes in Sri Lanka, the Republic of Korea, Thailand, the Philippines and Indonesia would have got under way; (although the last three were late starters they showed most encouraging achievements in 1971 and 1972).

The statements of policy did not come fast. The first statement of world leaders, dated 10 December 1966, had only 12 signatures, five of them from the ECAFE region: India, Malaysia, Nepal, the Republic of Korea and Singapore. But a year later, by Human Rights Day, the number had grown to 30 — twelve of them from the region (to the original five had been added Australia, Indonesia, Iran, Japan, Pakistan, the Philippines and Thailand).

But these were not official policy statements. The latter occurred in the following order: India (1952), Hong Kong (1956, support but no policy), Republic of Korea (1961), Malaysia (1966), Iran (1967), Indonesia (1968), Thailand (1970), and the Philippines (1971). In most cases, implementation with government funds followed the policy statements usually at least a year later.

The example of India

India deserves great credit for its pioneering work in the 1950s. The first efforts were timid, but it must be recalled that there was then almost no experience of other national programmes as guide — and IUDs were not yet available. By 1965 IUDs were already being inserted at the rate of 500,000 a year and, by the end of 1966, 1 million a year. After that, the drop to 470,000 in 1971, largely due to side effects (and especially to rumours about them), showed that progress is not automatic and that too much reliance should not be placed on any one method. But this setback was compensated for by an increase in sterilizations and a wider use of condoms.

Achievements

A glance over the past twenty years shows remarkable progress in getting acceptance. The beginnings were very slow: in the 1950s, India was almost alone in its groping for a successful formula for a national programme. Elsewhere

in the region were valiant efforts by mostly small and poor voluntary agencies, but nothing more. In the past two years the Philippines, Thailand and Indonesia have caught the spotlight with their spectacular advances from small and unpromising beginnings. Today, almost every country in Asia has its policy and is struggling to make it work.

The table provides a general view of the main programmes achieved in 1971, compared with 1970.

Table. New acceptors, 1971
(in thousands)

Country	Total		Sterilizations		IUDs		Pills		Others	
	1971	1970	1971	1970	1971	1970	1971	1970	1971	1970
India <u>a/</u>	4,581	3,745	2,144	1,320	473	471	....	....	2,234 <u>b/</u>	1,954
Pakistan	...	1,908	...	194	....	469	....	....	....	1,245 <u>b/</u>
Iran	385	299	0	0	14	8	371	291	....	....
Indonesia	419	132	0	0	171	60	206	52	42	20
Philippines	385	200	0	0	77	45	230	114	78	41
Thailand	404	225	23	19	86	74	295	132	0	0
Malaysia	55	56	4	4	1	1	48	50	2	1
Korea, Republic of	671	646	19	17	292 <u>c/</u>	295	199 <u>d/</u>	171 <u>d/</u>	161	163
Hong Kong	30	30	0	1	2	3	21	20	7	6
Singapore	21	26	4	2	0	1	9	12	8	11
Grand total (Incomplete)	6,951	7,261	2,194	1,557	1,116	1,427	1,379	842	2,532	3,441

Source: *Studies in Family Planning*, July 1972 and new edition of Factbook in *Reports on Population/Family Planning*, Population Council.

.... Data unavailable.

a/ 1 April 1971 - 31 March 1972.

b/ Mostly condoms.

c/

Includes reinsertions.

d/

Continuing users.

The most significant change is in the huge advance in sterilizations in India. Not only is the increase very large (more than 800,000), but it is an advance in the most effective method. The second point to note is the spectacular rise in three new programmes: Thailand, the Philippines and Indonesia. In 1971, Thailand and the Philippines roughly doubled their 1970 new acceptors. Indonesia has done more than three times as well in the two calendar years. If one compares the fiscal years, ending on 31 March, the figure is five times.

The 1971 figures for Pakistan are unfortunately not available. Assuming that its unweighted total for 1971 was half that for 1970, we get a total advance for the region of about 15 per cent.

China, containing almost half of Asia's population, is regrettably not in the list. The reason is that no statistics are available. Recently there has been an increasing spate of impressionistic reports of much family planning activity in that country, "using all methods." Most of the reports are about urban clinics or rural communes accessible to short-term visitors.^{1/} It would seem that there

^{1/} "East Asia on Review, 1971" in *Studies in Family Planning* for July 1972 with a supplement on health and family planning services in China, Population Council, New York.

is heavy community pressure to raise the age of marriage sharply and that there are many abortions, at least in the cities. It is hoped that the current tendency to open up China to more visits by scientists will result in more information about the rural areas. Such an exchange of experience would be mutually helpful; for the problem of reaching the village in the larger populations of Asia is far from solved.

Japan is also omitted from the table because, in the sense used for the other countries, it has no **national** programme. Nevertheless, it is the only country in Asia that **has** reduced its annual growth rate to about 1 per cent. It has accomplished this feat almost by accident. At the end of the Second World War, it found itself almost entirely without foreign markets, with more than 10 million people returned from its armies or from among its settlers in Manchuria and elsewhere. For better control of widespread abortions, it legalized them and soon was effecting about 1.5 million a year. (This number has now dropped to about one-half.) Married couples, afraid of the future, readily co-operated in family planning, mostly with condoms and other conventional methods. As the country recovered and people rushed to new jobs in the cities, the crowded quarters and high rents made couples **want** small families. Also the desire for all the new goods available — motor-cars, refrigerators, television sets, and so on — began to be stronger than that for more children. Since family planning in Japan has become a way of life, the Government spends little money directly to subsidize it. It does provide good-to-excellent medical services in the hospitals and health centres. Strangely enough, the Government has never officially approved either the oral pill or the IUD. Apart from abortions, the methods used are largely the conventional ones, with condoms apparently leading.

Sterilizations

The totals in the table are impressive in relation to what is being done in national programmes in other regions. India is probably doing more vasectomies than all of the rest of the world. The Republic of Korea has about 20,000 cases of sterilization a year. The number of female sterilizations in India also is rising and is surprisingly high. In nearly all the other countries of the region, most sterilizations are female — and they are relatively few, one important reason being that they are usually done immediately after delivery in hospitals — and there are hospitals only in the cities. Free deliveries are still all too rare, and the poor cannot afford to pay for even a few days in hospital.

IUDs

The number of IUDs inserted is generally not rising fast except in Indonesia, where it accounts for about one-third of all acceptors. But the annual regional total of insertions is about 1.25 million, which again is probably more than in the rest of the world.

Pills

Although pills rank fourth in Asia as a whole, they are by far the most favoured method in Iran, Malaysia, Singapore and Hong Kong. They are also gaining

ground in Thailand. In the Philippines they rank first (about 60 per cent of all acceptors) but are not rising. In the Republic of Korea there are about 200,000 users, but their numbers are rising only slowly. Total use in the region will probably continue to increase now that the newer, low-estrogen pills, usually with fewer side effects, are more plentiful in the field. The Philippines, Thailand and Indonesia are now each receiving pills at the rate of 5 million cycles a year or more.

In Pakistan, pills have been little used, and in India still less. Altogether, including commercial distribution, in Asia there are probably about 2 million women now on pills; about 10 per cent of the world's users.

Programme directors differ in their views about the rising demand for pills. If the continuation rate is high, as it appears to be in Thailand, the use of pills is all to the good. If, however, the rate is much lower than for the IUD, the emphasis should be on the latter. There is sometimes a danger that the Government may set high targets for the pill because it gets them free and there is no local expenditure necessary as there is for inserting loops or performing vasectomies. Also, in countries where field workers are paid per acceptor, there may be a special attempt to issue unwanted pills to reach targets.

With due regard against violating the moral concerns of acceptors about a particular method, the guiding principle should be to promote most actively the methods that will avert the most births. In young programmes, that can sometimes be ascertained only by sampling after the programme has been running for a couple of years. In the meantime, one can learn by watching the figures for other countries.

Condoms

In the unweighted table, above, condoms account for about one-third of all "new acceptors", more than 90 per cent in India and Pakistan and the rest mostly in the Republic of Korea. In 1971/72, India alone distributed 173 million condoms. The amount of contraceptive protection should not be overestimated. It depends on whether the condoms issued were actually used, whether they were used with every sex act, and whether the recipients were the same people or a constantly shifting crowd. Nevertheless, the condom is one more method — and one that requires no services from trained medical staff. India, where the present distribution is enough for some 2 million couples, is trying through government and commercial channels to reach as many couples as possible.

Abortions

The table contains no figures for induced abortions because nobody knows how many there were. Although abortions for non-medical reasons are illegal in all countries except China, Japan, India (very recently) and Singapore, this method is probably responsible for more reductions in the birth rate than any other single method.

No new method

The progress made to date has been achieved with methods that were available ten years ago. Despite innumerable announcements about "break-throughs", not a single new method is being generally used in mass programmes. Furthermore, none is in sight for at least three years.

Achievements among the older programmes have helped to allay the fear that the number of acceptors will fall off after "the cream has been skimmed." It is true that, when services are first offered, there may be a first wave of women near the clinics who desperately want no more children. But there remain the great bulk of women who have heard of contraception only vaguely or not at all. The Republic of Korea has shown over eight-years that, if a reasonable choice of methods is offered, the number of acceptors yearly will not decline but will rise at least until 30 per cent of all married women are practising. This of course assumes that the couples learn about the possibility of effective contraception and that good services are convenient and cheap or free.

Information and education

Not to be overlooked is the progress in information and education. The amazing spread of transistor radios in recent years has made it possible to reach millions of couples who need not be able to read. Until the last few years most national programmes were shy about talking directly to the public about family planning, but this is rapidly changing. India has shown great imagination in reaching its vast multilingual public, and the Republic of Korea much courage with its slogan: "Girl or boy, stop at two and raise them well."

Professional "communicators" tend to be most interested in radio, television and poster programmes. But the evidence is that these alone will not bring most couples to the service point, especially in the rural areas. For that, home visits and small group meetings are essential. Most countries still have a lot to learn about how to select, train and supervise home visitors.

As for the long-term problem of population education, which will involve revision of school texts in all grades, there has been much talk but little action. The Republic of Korea is perhaps making the most progress in this field.

Reporting systems

Many headaches having been caused by reporting systems or, rather, the lack of good ones, it is encouraging that several new national programmes such as those in the Philippines and Indonesia should have been able to install modern systems that can be computerized and the results fed back to the field promptly. The reporting covers upward of 90 per cent of the clinics, and the results are mailed back within 30 days of the end of the reporting month. One of the secrets of success is the use of airmail, special-delivery envelopes.

Targets

The question whether a programme should have targets is mostly settled:

nearly all the successful ones already have them. Programmers usually first estimate the drop in the birth-rate they think they can expect. Unfortunately, in most countries with poor vital statistics they cannot gauge progress by years with much accuracy. India still sticks to targets of what it would like to achieve, but never does on a national basis. This system is being gradually modified. Most other countries try for numbers of first acceptors based on the workers they have and raise their estimates annually as the number of workers increases. (This is the best single index.) The older method of measuring achievement by the number of clinics or the number of visits or revisits by clients for any purpose is being less and less considered seriously.

Incentives 2/

There has been time to try out incentives of many kinds. Except for India, there is little use of them for the acceptor, apart from occasional payment of transport to and from the clinic. Nevertheless, India has recently shown that the vasectomy programme can be speeded up, often dramatically, if the incentive is raised (sometimes up to US\$15 per couple, including a sari for the wife). The success of the famous "camps", however, depends at least as much on getting the co-operation of the whole community, including all local officials and informal leaders. The dangers, accepting men who are too old or with wives past menopause, are being lessened by more careful screening.

Incentives for referral agents are far more common. Some Governments have found ways to pay this money out of the regular budget, which is the best way if the paper work does not get too involved. Others have found foreign donors willing to pay. One of the best uses of incentive money is to **increase effort after** the target has been achieved. The Republic of Korea has not succeeded in doing so for IUDs because there is no extra money in the budget to pay for extra insertions by the private doctors who do most of the insertions.

Finances

One of the most satisfactory aspects of progress in Asia has been the extent to which the countries, in spite of extremely tight budgets, have backed the programme with their own money. This is particularly true of the big programmes of India and Pakistan and the potentially big one of Indonesia. India and Pakistan have been putting more than 1.5 per cent of their national budget into family planning; most of the others far less.^{3/} Among the countries that need to put in more money are the Philippines and Thailand; also, if it intends to lower its growth rate to 1.5 per cent by 1980, the Republic of Korea.

Foreign aid has been important. If it had not been for this, half a dozen of the major programmes in Asia might never have got off the ground. This is particularly true of the Philippines, where USAID enabled the leaders to get started fast while the legislation that had to precede the voting of money, was going through the long bureaucratic process.

^{2/} See Everett M. Rogers, "Field experiments of family planning incentives" Department of Communication, Michigan State University (May 1972).

^{3/} See *Population Planning* (Sector working paper) March 1972. World Bank, Washington, D.C.

In 1973 many of the programmes will get a fillip from UNFPA and other grants and loans. The money available for the world from this source is of the order of \$US40-50 million a year, of which Asia should get half if the countries are alert to the opportunity. These funds are especially valuable because the commodities required can be bought in the cheapest market and the money can be used to strengthen the programme with local currency where that is the greatest need. UNFPA will have to be satisfied, however, that the local Government will assume the burden for recurrent expenses after the introductory period, which is usually not more than three years. The Indonesian contract calls for some \$US13 million over five years in grants from UNFPA, coupled with a "soft" loan (without interest) of the same amount from the World Bank. India, too, has signed an agreement for \$US31.8 million, one-third a grant from SIDA and two-thirds a loan from the Bank. Other grants running to more than \$US1 million a year each have been signed or are being negotiated with Thailand, Iran, the Philippines, the Republic of Korea and others.

In the use of these new resources it is important that first priority be given to strengthening the operations in ways that will help reduce the birth-rate within the next years.

All these encouraging advances, plus the fact that a few countries are getting many more new acceptors this year than last, has created in some quarters a sense of euphoria that is excellent for morale but not wholly justified. Asia looks good in the world contest to reduce birth-rates only by comparison with other developing areas. There is, for example, not a single country (except perhaps Colombia) in South America that seems about to launch a national programme.

The reasons for caution in estimating the significance of what has been done are chiefly two:

1. The impact of the programme on the birth-rate is not yet known in most countries. Official statistics are far behind events and contain serious undercounts. (There are available, however, corrected estimates for some countries that provide a far more accurate picture.) Furthermore, in industrializing countries, other forces are at work which may account for much of the drop in the birth-rate.

2. There is always a temptation to lump all methods together and rejoice in the total rise of new acceptors. This is being gradually corrected by weighting, which may again be optimistic, especially with condoms. Urgently needed are more samplings to show continuation rates. The real test is the change in age-specific rates of births among married women.

"Comparisons are odious"

Inevitably the question is asked why some programmes are more successful than others. In situations as diverse as those in Asia, comparisons of achievements in a given year are misleading and unfair. They should be made only between countries in similar economic situations, at the same stage of development, and with the same opportunities. One can, however, make a few cautious generalizations:

1. Success depends largely upon the Government's own **determination** to reduce the birth-rate as fast as possible. This means much more than a formal statement of policy. It means that the head of State must support the programme publicly and repeatedly; that he must enlist the help of all ministries — and not only the ministry of health; that an adequate network of service points must be established and staffed; that home visiting must reach most eligible couples; and that the money for all this must be available.

2. A successful programme requires that the government policy be consistent for a long period; otherwise momentum is lost.

3. There must be wide enough understanding of the programme so that necessary funds will be voted on time and executive orders carried out promptly.

4. Some countries have a great advantage in that most of the eligible couples are literate. (It generally costs more to get an illiterate couple to practise family planning than a literate one).

5. Some Governments move very slowly because of fear of the political opposition or for fear of "backlash" because of medical opposition or for fear of "backlash" because of medical mishaps or severe side effects that may get wide publicity. The fear of religious opposition is waning; that of resistance on other traditional grounds is yielding more slowly.

6. Countries where the preference for boys over girls is strong have special difficulties in reducing the fertility rate, especially among women under 30 years.

7. Programmes starting more recently have the advantage of learning from older ones and tend to make much faster progress than the earlier, pioneering ones.

8. Some poor countries which were ready to act earlier simply did not have the money to do so. If foreign aid is acceptable, it is now usually available.

9. Some countries rely too much on one or two methods, which leads to trouble if one method becomes discredited.

10. Some countries become complacent too soon about progress in reducing the birth-rate, seemingly unaware that the fighting gets tougher as the battle goes on.

Some problems

All of the programmes in Asia are voluntary, usually emphasizing the health benefits of family planning rather than the economic urgency of it for most countries. The underlying question, stressed by demographers, is whether such efforts will be enough to stop the population explosion in time. Certainly they will not be unless the present tempo is accelerated. Some of the problems are listed below. It should be noted that most of them are "second-generation" problems. The typical country is not seeking money and supplies to start;

it is facing the need for better organization and more (and more competent) staff to get on with the job far more rapidly than before.

General problems

1. How to get ordinary people to think of the normal family as having two or three children at most instead of four or more? This calls for education in the schools from the early grades, including revision of textbooks; it also calls for reaching those who have dropped out of school. This long process has scarcely begun.

2. How to get services to the village? Three-quarters of the population are rural and most of them are not within walking distance of service points. The service must be taken to the village, but how?

3. How to get wider acceptance of sterilization?

4. When to press for liberalized abortion laws?

5. How to get family planning placed high enough among priorities; and the best executives assigned, with the status and authority that enable them to get action fast? India is an exception as far as the bureaucratic structure is concerned, with its Ministry of Health and **Family Planning**.

6. How to lessen fear among high officials that the people will not accept family planning for religious or traditional reasons?

7. How best to muster over-all government support — not mere lip service at the top only nor just the public health agencies alone?

8. How to get continued stress on the economic importance of family planning? In spite of rhetoric at the top, most officials are unaware of the economic implications and hence are largely indifferent.

Specific problems

9. How to get paramedical personnel authorized to issue pills and, after training, to insert IUDs?

10. How to get enough action quickly? The number of marriageable women is rising rapidly in most countries.

11. How to broaden programmes to include more than one or even two good methods?

12. How to get the head of State to speak out firmly, explicitly and frequently on the importance of the programme? The Philippines is an exception.

13. How to get recognition that a new project of this size and complexity cannot be carried out under the rigid restraints that characterize most of the routine programmes?

14. How to decentralize work to the provinces?

15. How to set up good reporting systems for both programme and financial data?

16. How to move money quickly from the central treasury to the provinces and to the related projects?

17. How to get donors to decide whether they are ready to help at all? Some decisions are easy: countries will not help (at least directly) other countries that they do not recognize. But, even where this is not a problem, there are questions of political preference, relations with other donor agencies, and a host of other considerations — all of which spell delay.

Practical answers to these questions need to be found if most countries are to get the rate of annual increase down to 2 per cent by 1980. This seems possible, but only if family planning is put on the urgent list. To bring it to one per cent even by the year 2000 A.D. will mean that, in most of the larger countries, there must be a still sharper acceleration in the programme. India and Pakistan have been spending more than 1.5 per cent of their national budget on family planning. Most of the other countries are spending much less than 1 per cent. Countries that expect sharp drops in the birth-rate must be willing to pay most of the bill. The economists say that this is the best possible investment to raise the standard of living.^{4/}

^{4/} See "Factbook" in Reports on Population/Family Planning, 1972 edition, Population Council, New York.

POPULATION EDUCATION—A VITAL CONCERN*

by

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As a result of the commendable reduction in neonatal, infant and child mortality in recent years, over 40 per cent of the population in many developing countries (in some, over 45 per cent) is under 16 years of age. These young people will constitute the major portion of the adult population of the world in the remaining three decades of the twentieth century and their reproductive behaviour will be of central importance to the efforts to control the rate of population growth. Yet in most countries throughout the world this group has received little or no attention in population limitation programmes. Attention has been focused on the sectors of the population presently in the reproductive age levels. This priority emphasis is perhaps understandable in the context of the urgent need to effect a reduction in current births and in view of the limited financial and personnel resources available for most family planning programmes. This emphasis derives also from the fact that, until quite recently, very few persons concerned with family planning or related programmes ever thought of developing an awareness of the population problem among young people (except in those instances where papers or courses were introduced at the college or university levels). 1/

Thus children and young people have been informed, if at all, by chance exposure to mass media, such as radio programmes, billboards, motion pictures and pamphlets, all of which have been designed to elicit response from adults — the present parent generation. This is not to suggest that similar appeals be made to children and youth. What is suggested is that the world's young people, who will become the parents of the next generation, should be made aware of the magnitude of the population problem and educated to recognize that a small family is not only proper but highly desirable and easily obtainable.

Today's parents have a measure of responsibility in helping achieve these behavioural and value changes and should receive guidance and encouragement from responsible governmental officials, preferably through formal adult education programmes, but the prime responsibility lies with the school systems. By their very nature, educational institutions are better equipped to guide and direct formation, while instilling skills and competencies, than are other of man's institutions. The educational systems of an increasing number of nations have made progress in reorienting school curricula away from purely academic subjects and toward a new focus — the functional demands of adult life. But this new focus must be sharpened and carried further so that every young man and woman becomes an informed, articulate exponent of a rational population policy

* The opinions expressed in this paper are the author's own and do not necessarily reflect the views of the ECAFE secretariat or of the United Nations.

1/ One of the few who did "speak out" some time ago was Sloan Wayland of Teachers College, Columbia University. See his article "Family planning and the school curriculum" in *Family Planning and Population Programs*, (University of Chicago, 1966), pp. 353-362.

for his own country and for the world.

This needed "population education" is not to be concerned with "family planning education" and "sex education", except where age and maturity would make these appropriate. However, upper-level high-school students and those in colleges, universities and professional schools do need to know enough about the purpose and resources of local family planning clinics, both public and private, so that they will be anxious to take advantage of such facilities after they are married. Knowledge of the purpose and availability of clinics can be transmitted without teaching about specific contraception methods.

Students in the elementary classes, starting as early as 8 or 9 years of age, can be made to understand the pattern of population growth in their own countries, with particular attention given to birth and death-rates and rates of population increase. Then, as they progress through the grades, they can be given comparative information for neighbouring countries and a general understanding of world trends. Such factual information could be introduced readily through such existing subjects as geography, civics and history. Arithmetic problems could easily utilize population data. This exposure to population dynamics should also include data regarding food production, preservation and distribution. A word of caution: students should not be overwhelmed in any one year or in any one subject with these population awareness units. On the contrary, this new information should be introduced little by little so as to keep the student's appetite keen for more knowledge regarding population. Thus, by the time each boy and girl is ready to graduate from high school, each will have an appreciation of his or her role and responsibilities as a consumer and potential producer in a complex society.

Concomitantly, each student must be helped to gain a basic understanding of the processes of human reproduction. Studies have proved conclusively that all normal boys and girls manifest an interest in these processes at an early age and that they respond favourably when exposed to factual presentations by well-trained teachers. The science curriculum is a logical setting for such instruction, provided that the material introduced fits naturally into the normal sequence and is appropriate for the age and maturity of the students. The upper secondary classes, those 15-18 years of age, can then be led into an understanding of health problems associated with pregnancy and childbearing. The comparative health problems of children born to young and older mothers should be discussed along with the importance of proper spacing between births. Adequate diet, the relationships between malnutrition and disease, personal hygiene, family and community sanitation responsibilities also will logically be part of such units of instruction.

In addition to the instillation of this knowledge and related health values, emphasis needs to be given to the economic and social consequences for a family made up of several children. Students must be made to understand that, with a given level of resources and earning power, the larger the family, the smaller the share per child. This has long been true for town and city families but is becoming increasingly true for the majority of families, particularly in developing countries, where small holdings become ever smaller generation after generation. With this awareness, each student can be taught to apply a similar analysis to his community, his nation and to the world as a

whole. Each can then be made to realize what Dr. Hauser so aptly pointed out, that two kinds of global crises confront mankind, each posing major world politico-economic problems. 2/

The first is the ultimate crisis which will result from the fact that the globe is finite and that living-space will be exhausted unless population growth is checked. At this point, students need to be disabused of the assumption that migration to other planets can become a feasible alternative to birth control. The nearest star is Alpha Centauri, 4.3 light years away from the earth. Even at an average speed of 7 million miles per hour, a rocket ship would take 350 years to reach the nearest planet outside our own solar system.

But this is a long-range problem. In the short run (i.e. up to the year 2000) there is no problem of exhausting the space on this earth, but there is abundant reason to be extremely pessimistic about the possibility of greatly increasing the average world level of living during the remainder of the present century. This produces the second global crisis. 3/ The total world production of goods and services in 1960 could have supported approximately 750 million persons at the North American level of living and about 1,750 million at the European level. The actual world population in 1960 was fast approaching 3,000 million, however, and is now (1972) more than 3,800 million. Thus it is easy to demonstrate to students that the economic load will become an impossible one for the developing nations if their rates of population increase follow the trends indicated in the United Nations projections.

To achieve this awareness and concern, there has been emerging in the past few years the recognition that population education is indeed a vital concern. In this connexion, several people have attempted definitions of population education, but a universally accepted definition has not yet found its way into the literature. A few of those which have been attempted are:

"Population education is defined as the process by which the student investigates and explores the nature and meaning of population processes, population characteristics, the causes of population change and the consequence of these processes, characteristics and changes for himself, his family, for society and for the world." (Viederman).

"Population education is defined as the teaching and learning of reliable knowledge about the ways of inquiring into the nature of human populations and the natural and human consequences of population change." (Massialas).

"Population education seeks to bring about a realization of the individual, family, social and environmental effects of the explosive increase in human population, the rapid shifts in concentration and distribution of people, the implications of changing age and other demographic patterns, and the conceivable options that may be open to mankind to cope with the consequent problems. While it is not confined exclusively to a particular age group it is focused primarily on students who will become the principal childbearers within one or two decades."

2/ Philip M. Hauser, "World population and the war for men's minds", in *Birth Rate and Birth Rate and Birth Right*, (MacFadden, N.Y., 1963), p. 40 ff.

3/ *Ibid.*

(Population Reference Bureau).

It is obvious from these rather involved statements that it is not easy to reduce such a broad area of learning into a concise definition. Population education is a relatively new concept and it seems more logical to explain it in terms of objectives rather than by a single definition. Some reference was made above to general objectives or goals, but we need to be more precise and list specific objectives. A thoughtful enumeration of such objectives was prepared by Tjokrowiriono (Indonesia); abridged by the author, this reads as follows:

1. To understand the basic principles of demography.
2. To learn about the causative factors of rapid population growth.
3. To understand the impact of rapid population growth.
4. To understand the close relationship between the people's well-being and socio-economic development.
5. To understand the meaning and significance of environmental harmony.
6. To learn that family size can be controlled, as opposed to fatalism.
7. To understand the significance of the small family "norm" and its relation to the quality of living.
8. To understand the far-reaching consequences of population density and rapid growth for one's self and one's environment.
9. To realize that human behaviour has a direct influence on the social structure and on social change.
10. To change attitudes and instill a sense of responsibility towards the welfare of one's nation and the world.

If these objectives are attained, students will have instilled in them an awareness and understanding of one of the most striking phenomena of the modern world, namely rapid population growth, its causes and implications. A carefully developed programme will help students to conceptualize the relevance of population and will assist them in making rational and responsible decisions about population matters. While every citizen needs to be made to understand that too rapid population growth is a problem for his country and for the world, he needs also to be taught that population growth is a phenomenon which is responsive to human direction.

The systematic study of population dynamics and related matters, until very recently, was limited to institutions of higher learning in such subjects as sociology, demography, economics, biology and other life sciences. Two United States demographers, Warren S. Thompson and Philip M. Hauser, were the first to urge the inclusion of population studies in the curricula of elementary and secondary schools. Another United States educator, Sloan Wayland, was apparently the first to use the term "population education" and has pioneered its inclusion in school curricula throughout the world. As a result of the urging of these men and of many other concerned persons who have joined in the campaign programmes to develop an awareness and understanding of population growth and its relationship to socio-economic development, population education programmes have been endorsed by several countries. But once it has been decided to expose young people to the subject matter of population, questions immediately arise as to when, where and what?

One of the first decisions which has to be made is whether the programme should be started at the elementary or the secondary school level. When one reviews the data which show the percentage of students in school and out of school of various age groups, one is forced to conclude that, if we are to reach a majority of students in Asian countries, population education must be introduced at the elementary level. For the Asian region as a whole, the enrolment ratios for first, second and third levels of education in 1967 were in the proportion of 75:22:2.6. The table shows school enrolment ratios by country for secondary education, using grades and age groups most appropriate for each country.

Proportion of secondary age group attending school

Country		Grades	Secondary age group	Percentage
Afghanistan	(1967)	VII-XII	13-18	4
Burma	(1967)	V -X	10-15	17
Cambodia	(1966)	VII-XIII	12-18	9
India	(1967)	VI -XII	11-17	22
Indonesia	(1967)	vi -XII	11-17	13
Iran	(1967)	VII-XII	12-17	22
Japan	(1965)	VII-XII	13-18	82
Korea, Republic of	(1967)	VII-XII	12-17	34
Laos	(1967)	VII-XII	12-17	2
Malaysia	(1965)	VII-XIII	12-18	25
Mongolia	(1965)	VII-XIII	12-18	54
Nepal	(1965)	V -XI	12-18	5
Pakistan	(1966)	VI -X	11-15	14
Philippines	(1964)	VI -XII	11-17	36
Singapore	(1967)	VII-X	13-16	45
Sri Lanka	(1964)	VII-XIII	12-18	43
Thailand	(1967)	VII-XII	14-18	13
Viet-Nam, Republic of	(1967)	VI -XII	11-17	17

Source: Adapted from *Programmes of Education in the Asian Region: A Statistical Review*, UNESCO Regional Office for Education in Asia, Bangkok, 1969, pp. 95-98.

The table clearly shows that, in most Asian countries, if population education is not introduced until the secondary level, the majority of students will be missed because they have already dropped out or have never enrolled. On the other hand, with the exception of four countries where elementary enrolments were below 50 per cent of those eligible in 1967,^{4/} a programme introduced at the elementary level could potentially reach at least 60 per cent of the elementary school age group.

Another consideration in favour of introducing population education at the elementary level is that, in many countries, secondary schools are not available in every village, making it necessary for those who do attend secondary school to leave their home communities. Many of those who do so never return to

^{4/} Afghanistan, 21 per cent; Laos, 30 per cent; Nepal, 29 per cent; and Pakistan, 39 per cent.

their parents' home to live for any period of time and thus their impact on the attitudes and values of their families and of their villages is negligible. This means that those who have the most education in the village are often those who have not gone beyond the elementary school level, and village leaders are usually drawn from this group. The elementary school also has an important psychological influence in shaping village public opinion, a consideration which is vital if the population awareness message is to reach those families in the highest fertility segment of the population. Furthermore, some studies which have been made in India, the United States and other countries show that students of elementary age have already given thought to the size of their future families and many of them have developed well-formulated concepts as to ideal family size, both for themselves and for others.

On the other hand, some people argue that, because secondary school students are older and more mature, they will be better able to grasp the message of population education and to make behavioural decisions in conformity with its long-term goal, i.e. the acceptance of the small family norm. It has also been pointed out appropriately that students who complete a secondary-level education are more likely to become community leaders, particularly political leaders who will have a decision-making voice in government policy. Some of them will rise to important administrative positions, with the opportunity of influencing the course and scope of population programmes in their respective countries. Such decisions should, of course, be made only by individuals who have a sound understanding of the magnitude and implications of the population problem. Secondary schools can perhaps provide this type of education better than elementary schools can.

Still another argument given by those who urge delaying inputs until the secondary level is that the curricula materials can be more quickly and less expensively introduced at the secondary level than at the elementary level. This last argument has little to support it, and, because of the tremendous urgency needed to cope with the population explosion throughout the world, we must use all levels of education, all available media and all organizations, both public and private.

Having agreed that population education materials should be introduced at both elementary and secondary levels (and, by implication, at the tertiary level as well), programme planners are then confronted with deciding on the best methods to use in introducing such materials. One procedure calls for the development of a separate course for population education which would deal only with the subject of population and would be introduced for a specified period of time, i.e. one term or one year. This procedure has been followed for a number of years in many universities throughout the world. However, it would be difficult to develop a single course for the lower elementary grades, as curricula at the elementary and secondary levels are already so cluttered with a wide variety of courses that consideration should be given to alternative methods. One alternative is referred to as the "unit of study" approach. This usually consists of a series of related concepts which are integrated into a scheme which takes roughly from one to four weeks of class time. A number of such units in different subjects and at different grade levels can be prepared. The unit of study is con-

ceptually independent and assumes no prior knowledge of the ideas or issues discussed in it. It need not fit into the chronology of the main subject and is thus a course within a course. Some have referred to it as a "mini" course. The weaknesses of such a procedure are obvious.

A third method which has the support of a number of proponents is called the "teacher-dependent" course concept. This requires that each teacher be given a thorough training in population education and then encouraged to incorporate independently appropriate materials into his or her subject matter. If such a method is to succeed, highly-qualified and highly-motivated teachers must be turned out. While we would hope that ultimately all teachers will be thoroughly trained and highly motivated in favour of population education, we have to recognize that population education is still in its infancy and resource decisions should be made so as to achieve the maximum benefit in the shortest time possible. Another consideration is that there would be little uniformity where each teacher independently develops his or her own presentations.

A fourth method is referred to as the "permeation or programme infusion" method. In this situation, population education supplements are prepared for infusion into all appropriate existing subjects and at all grade levels. This approach does not require a major reconstruction of the curricula; rather it supplements existing subject matter and does so without breaking the continuity of instruction. It adds material about population which should have been there all the time. A number of subjects lend themselves readily to the infusion of such supplements, e.g. geography, history, civics, economics, the biological sciences, home economics and arithmetic, and these infusions can start at a very early age in the elementary grades and can be broadened and made more sophisticated as students progress up the educational ladder and through the secondary level.

This infusion process, however, should be recognized as a temporary measure only. It is designed to get population education materials into existing curricula in the shortest time possible, with the expectation that syllabi and course content will be reviewed and revised from year to year. Concomitantly, when textbooks and reference materials are revised and new ones written, the authors should be called upon to integrate appropriate population awareness materials into their writings. If these procedures are followed, population education will in a few years become an integral part of the curricula at all levels of education and will cease to be looked upon as something special.

The "what" question raised earlier referred to content. Having agreed that population education should be introduced at all levels, i.e. elementary, secondary and university, and having agreed that the most appropriate method is that of infusing supplements into existing courses, programme planners are confronted with the more difficult task of developing content. Wayland has published a series of propositions to be used by those responsible for planning and developing population education programmes.

They are as follows: 5/

5/ Sloan Wayland, "Integration of family planning in curricula of grade schools, secondary schools, medical schools and universities", paper presented at the IPPF Conference, Baguio City, Philippines, March 1971.

1. The content and instructional methods used should be pedagogically sound.
2. The responsibility for the introduction of population education into the formal education system rests with the educators.
3. Population education should be integrated into the curriculum rather than added as a new subject.
4. The content of population education must be worked out in detail by education specialists in each country.
5. The content of population education should be developed with full appreciation of related education and activities programmes addressed to adults.
6. Realistic goals for population education should be formulated.
7. A long-range strategy for introducing population education should be formulated.
8. Family planning leaders have important functions to play as stimulators, resource personnel, critics and supporters.
9. High priority should be given to universities and professional schools as centres for the general education of leaders, the preparation of professional personnel, and the development of basic knowledge on which policies and programmes may be built.

These nine propositions are designed to serve as guidelines for the introduction and implementation of population education programmes and to assist with the process of developing suitable curricula. They appropriately emphasize that population education is education and not propaganda and that its content must be developed by experienced educators. Indeed, it is vitally important that this be done by people who are teaching or who have at some time in the recent past been active classroom teachers. A feasible procedure would be to call experienced teachers from throughout the country into a workshop, along with teacher trainers and educational administrators. The first task for the workshop would be to draw up general content statements for elementary and secondary levels. This would be followed by the preparation of course guides for the integration of population education into the various grades or standards.

Such course guides are nothing more than outlines which must be filled in. Thus the most difficult task remains — that of developing detailed course content for each grade and divisional level. Various procedures for accomplishing this have been suggested and tried. One would have the same workshop participants continue working till usable supplements have been produced. This may be extremely difficult for teachers who have had no experience in the utilization of population education data. Thus it might be wiser to have the participants experiment for one year with the content lists and course guides, each relying on his or her own initiative in developing materials from the lecture

notes and reference materials provided during the workshop. Following this first experimental year, the same teachers could be called to a second workshop and given the task of developing detailed supplements. This procedure has been tried with success in some Asian countries.

An alternative method for developing content would be to organize and staff a central cell or unit which would have the principal responsibility for developing the curricula materials. In those countries having a unified national educational system, this procedure would have much to commend it. Local conditions and the availability of qualified people will obviously determine which procedure should be followed. In some countries it may be possible to utilize two or more procedures simultaneously. All efforts in the development of supplements must, of course, accompany a thorough review and evaluation of existing syllabi and teaching materials.

Irrespective of whether a single method is followed or a combination of methods, one of the greatest aids to the writing of content would be a comprehensive sourcebook. The sourcebook would identify and explicate a solid core of content, and be not only a book of knowledge but a guide for the effective presentation of content. Coverage should include all grade levels and all subjects. Each country involved in getting a population education programme under way should give high priority to the development of such a sourcebook. It should be recognized, however, that such an undertaking would be difficult, time-consuming and expensive, and its preparation could delay the implementation of a programme. On the other hand, its value to all teachers, particularly those utilizing the "teacher dependent" method, and to workshop participants and writers of textbooks, is obvious.

As noted earlier, the success of in-school population education programmes will in the last analysis depend upon the teachers. Teachers must not only possess a thorough understanding of the content but must be able to handle the content professionally and not permit personal values to bias their objective presentation of the materials. If such qualified teachers are to be available, top priority must be given to the introduction of population education in all teacher training institutions. The importance of this was emphasized by Wayland in his proposition No. 9, listed above. Equal stress must be placed on carefully planned in-service training for teachers already employed.

Assuming that an appropriate content is developed and teachers are trained to use it effectively, it must be realized that only a part of the job will get done because, as noted above, in most countries throughout Asia a significant proportion of children either never enter school or dropout after two or three years. These people must be reached by out-of-school programmes. Such programmes should, in the shortest time possible, be developed to utilize the facilities of all public, quasi-public and private organizations. Most countries have programmes for rural or village development. Most countries also have an agricultural extension service which has as its principal responsibility the development of scientific agriculture. All countries have a public health organization. Most countries have relatively well developed labour organizations; all have a variety of religious, cultural, social and service organizations. All countries

have communication media, of which the most important are newspapers, periodicals and the radio. A large number of countries now have television available. Innovative people in positions of responsibility connected with organizations such as these can draw upon educational materials developed by professional educators and, with suitable modification, utilize those materials to carry the message of population awareness to all levels of the populace in all districts of the country. If this is done, we can feel reasonably satisfied that, within a generation, population education will have made a significant impact on human values and behaviour so that man's most pressing problem will no longer be too-rapid a population growth.

Substantial progress is being made in several Asian countries in this effort to instill in people of all ages an awareness of the magnitude of the population problem and its implications. This educational effort, which is not to be confused with family planning education or sex education, also seeks to establish attitudes in young people which, when translated into adult behaviour, will speed the acceptance of the small family norm.

Japan, the first Asian nation to initiate a programme for population education (1968), is continuing on a phased course of curricula revision which is designed to result in population awareness units being made integral parts of curricula at both elementary and secondary levels by 1973.

India, the second Asian nation to endorse officially a national programme of population education (August 1969), has established a cell within the National Council of Educational Research and Training charged with guiding and co-ordinating state activities in this field. An All-India Conference was held during October 1971 in New Delhi, with leading educators from 16 States in attendance. Each State is now developing implementation programmes in conformity with the guidelines developed at the Delhi conference.

In the Philippines, where in February 1970 the Ministry of Education endorsed population education as national policy, a central unit has been set up to develop a detailed five-year project for the integration of population education into public and private schools, as well as in adult and community education programmes. Educational supplements, which were first developed in a six-week Colombo Plan workshop (May-June 1970) and revised in a second workshop held in May 1971, are being tried on an experimental basis in ten pilot districts. Based on these trials, further revisions and improvements will be made, and the materials will then be printed for utilization in all school districts throughout the Philippines.

Also in the Philippines, educational materials for infusion at the college and university levels have been developed by an ad hoc committee under the sponsorship of the Family Planning Organization. This activity will result in the publication of specific course guidelines to be used by college and university professors in exposing students to the population problem and its implications.

Commendable progress is also taking place in Indonesia, the fourth Asian nation to commit itself to a policy for the development of population education.

Its decision, which was made in April 1970, was followed in October of that year by a four-week seminar where general policy decisions were taken and guidelines for syllabi were written. Soon after this a unit was established within the Office of Educational Development which has been busy preparing educational supplements for introduction into elementary and secondary schools' curricula throughout Indonesia. The same unit is also developing population education instruction kits, consisting of 36 slides and a recorded commentary, designed for use in motivating teachers, teacher trainers and other key education personnel.

In Malaysia, the introduction of population education in schools is moving rapidly from phase I into phase II. Its first workshop, which was held in October 1971, was followed by a second which met in April 1972. At these workshops, procedures for the inclusion of population awareness materials into the school curricula were developed and some resource and text materials prepared. The Schools Division is developing instruction kits similar to those being prepared in Indonesia and designed to assist a large number of teachers in the effective utilization of population education materials being made available to them.

The population education programmes which are now well under way in the Philippines, Indonesia and Malaysia were initiated and funded by the Office of Population Affairs, Colombo Plan Bureau. This office is staffed to assist all member nations of the Colombo Plan in the planning, developing and funding of population education programmes.

Thailand, through the initiative of the UNESCO Regional Office in Bangkok, held an orientation seminar for population education in December 1971, and a phased programme for implementation is now under way. The Bangkok office of UNESCO earlier (September 1970) convened a regional workshop attended by participants from 13 Asian countries and representatives of United Nations agencies as well as other international and regional organizations. UNESCO has since completed arrangements with UNFPA to provide assistance to countries which need help in establishing population education programmes. 6/

Sri Lanka has now joined the growing list of Asian nations endorsing population education, and its first national orientation seminar was held in Colombo during March 1972. This was organized by the Curriculum Development Centre and the Ministry of Education, in collaboration with the Colombo Plan Bureau which provided the funding. Strong support for the introduction of population education also comes from the Ministry of Planning and Employment.

Other interesting developments throughout Asia are:

1. Iran is incorporating population awareness materials in textbooks used in the teaching of geography, social studies, home economics and biology for grades 6 through 12.

6/ Other organizations assisting in the development of population education throughout Asia are: Population Council, Ford Foundation, USAID, East-West Centre, World Education, Pathfinder Fund, World Neighbours and IPPF.

2. Afghanistan is expanding its adult literacy programme and plans to utilize population awareness materials as part of this effort. Plans are being made for a national seminar to acquaint government officials and educators with the magnitude of the population problem and its implications.
3. In Pakistan, a curricula revision project is under way which will take into consideration the need for population materials. At the 1969 annual meetings of the Pakistan Family Planning Association, considerable time was devoted to a discussion of population education.
4. In Nepal, as part of a "science teaching enrichment project", population education materials are being introduced into ten teaching units for grades six through ten.
5. In the Republic of Korea, a proposal for a population education programme has been developed by the Central Education Research Institute of the Ministry of Education, and initial steps for its implementation are being taken.

These activities and others one could cite should offer encouragement to those concerned with this problem, but it is recognized that this appeal for a deliberate and intensive programme of population education, utilizing for the most part the existing education systems, will not be easy to implement. In most countries, there is no background of experience to call upon, and thus no models are available to adapt to local circumstances. Another difficulty is that extensive innovations in education require supportive changes at a number of different parts of the total education system. Among the essential changes needed are: revised syllabi, revised textbooks, development of subject matter supplements, modified content of some external examinations, specialized pre-service education for new teachers, improved in-service education for experienced teachers and supervisors, and recruitment and training of staff for out-of-school and adult programmes.

Each country will, of course, proceed according to the dictates of its own conditions and resources, and under the best of circumstances the essential changes will require a number of years to accomplish. But, because of the magnitude of the population problem, no country can afford not to utilize its best resources in helping to solve the problem.

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PROSPECTS FOR CONCEPTION CONTROL*

by

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Over the centuries man has been possessed by the desire to have in his hands the means by which he can control his fertility. The writings of the ancient Egyptians, Greeks and Romans, and of Hebrew, Arabian, Chinese and Indian physicians abound in descriptions of oral and internal contraceptives. Many of these were quasi-rational and some have proven themselves highly spermicidal. Others were based on superstition and magic rituals, and were often unpleasant, uncomfortable or painful for the user.

Man in his endless search for more effective, more acceptable and safer methods of controlling fertility has experimented with a variety of methods, ranging from the extremely simple to the highly sophisticated. Nevertheless, today, in spite of great advances made in the field of conception control, we are still searching for simpler and better methods which do not need special care or follow-up, which are highly effective and yet reversible at will, which are aesthetic and do not need repeated action, which are within the means of rich and poor alike, and which will be acceptable to all — irrespective of their country, culture or creed.

Let us take a look at some recent developments in contraceptive technology and some of the avenues of research which have opened up new prospects for birth control in the world of tomorrow.

The nineteenth and early twentieth centuries saw the development of the mechanical and chemical contraceptives on which the birth control movement in its earlier stages greatly depended. However, the prospect of developing an oral or injectable contraceptive which did away with the clumsy use of rubber sheaths and diaphragms or messy suppositories and jellies has always intrigued and inspired research workers. It is only within the past eighteen years that we have entered the field of "physiological control of fertility" or the era of hormonal contraception. Today we have the progestational steroids in the form of pills to be taken by the women orally, either once a day, once a week, or once a month, injections to be administered once in one, three or six months, and more recently, silastic capsule implants whose contraceptive effect can last for three years or more. Most of these progestogens suppress ovulation through their action on the hypothalamus. Their anti-fertility effect is supplemented by their rendering the cervical mucus impenetrable to sperm and by their making the endometrium inhibitory to implantation. All these methods have no doubt made the matter of contraception highly effective, considerably easier, more aesthetic and, therefore, more acceptable both to sophisticated women and to their less sophisticated sisters. The silastic capsule implants,

* The opinions expressed in this paper are the author's own and do not necessarily reflect the views of the ECAFE secretariat or of the United Nations.

in particular, hold promise of a method which, while it offers prolonged protection against pregnancy, is yet reversible at will by the simple act of removing the implants.

Attempts have also been made to incorporate progestational steroids into other vehicles such as finger rings, bangles, vaginal pessaries and IUDs from which the steroids are absorbed into the body through the skin or mucous membrane.

Nevertheless, as present knowledge goes, the use of the progestational steroids as contraceptives is not without its problems. Prior to their use, it is necessary for a woman to undergo a thorough general and gynaecological examination, and, during their use, it is essential that she should be under the observation of her physician for the occurrence of possible long-term effects, chief among which are thromboembolic episodes, and effects on the carbohydrate metabolism, thyroid metabolism or liver functioning. Besides, in a substantial number of women, unpleasant side effects such as nausea, headache, dizziness or menstrual irregularities call for reassurance and treatment and, at times, necessitate discontinuance of the drug. The production of more potent progestogens and the reduction of doses of these drugs to levels where the side effects are avoided without lowering their effectiveness in preventing conception has, to a great extent, improved the prospects for this group of contraceptives.

With the isolation from the hypothalamus of gonadotrophin-releasing factors which control the release of the gonadotrophic hormones from the pituitary, the possibility is envisaged of developing antibodies or drugs which can specifically inactivate the luteinising hormone-releasing factor and thereby prevent ovulation. As Graham Chedd has so graphically stated: "Preventing a pregnancy by upsetting the extremely delicate hormonal control system that makes it possible is undoubtedly the most effective method of contraception; and using any of the present contraceptive pills is like using a tank to destroy a spider's web."

Just as in women the progestational steroids act by inhibition of ovulation, in the male they act by inhibition of spermatogenesis. However, as they also act on the leydig cells of the testis, they reduce libido and hence are not acceptable as male contraceptives. The possibility of suppressing sperm formation by other non-steroidal drugs which do not have any effect on the hypothalamus has also been considered, and several compounds have been found to have such an effect. Among those are listed the nitrofurans, alkylating substances, bis- (dichloroacetyl) diamines, and dinitropyrroles. Unfortunately, the administration of all these drugs has been accompanied by undesirable side effects which preclude their use. The subdermal insertion in male rats of silastic capsules containing cyproterone acetate has been shown to produce degeneration of the seminiferous tubules and consequent loss of fertility. This effect has been found to be reversible. Besides chemical means of suppressing spermatogenesis, certain physical factors, such as heat and high altitudes, have also been found to reduce spermatogenesis, but it would obviously be impractical to suggest the use of such physical means to ensure fertility control. One aspect to be considered in the use of all these methods is whether their mode of action, viz., by suppression of spermatogenesis, would be acceptable to males in all cultures. In explaining

the after-effects of vasectomy, special efforts have to be made to reassure the man that after the operation sperms continue to be produced by the testis but cannot find an exit because of the mechanical block in the vas, and also that the male hormone is produced and enters the blood stream as usual so that masculinity and potency are in no way affected. It might be equally or more difficult to convince a man that the cessation of production of spermatozoa will in no way lower his potency or lessen his libido.

Perhaps the most acceptable method of controlling fertility would be a physiological means of preventing penetration of the ovum by the sperm, since interference at this stage is least likely to disturb other reproductive or body processes. Attempts have been made to bring about mass agglutination of sperms in the vagina, to immunize men against their own sperm or women against their husbands' sperm, to change the fertilizing capacity of the sperms, or to block the entry of sperms into the ovum. Although all these are promising avenues of research, none of them has yielded results which approach hopes of immediate practical application in human beings. Before using a method of immunization, for instance, we must ensure that the process is reversible at will, that the antigens are specific, and that the antibodies reach the required site of action.

A method that spells hope for those couples who will not or cannot practise the regular use of contraception, and who yet do not desire another child for some time, is the post-coital or "morning after" pill. Studies have been carried out in animals and in humans with oestrogens as well as with anti-zygotic agents, such as chloramphenicol, chlormiphenol and ORD-3848, administered up to four to six days after coitus has taken place, but the high doses required of the former cause nausea and vomiting, and the latter have been found to cause toxic side effects. Recently the Central Drug Research Institute at Lucknow has developed "Centchroman" which has shown promise as an effective post-coital contraceptive. This drug prevents the nidation of the zygote or fertilized egg, and has, so far, proved to have no toxic or teratogenic effects.

A similar mode of action, namely the prevention of implantation, has been ascribed by one group of workers to the IUD. Others have suggested that the IUD acts by accelerating the tubal transport of the ovum, while still others have evidence to support the theory that their anti-fertility effect is due to leucocytic and histiocytic infiltration of the endometrium. Whatever the mode of action, however, and notwithstanding its chequered career, the IUD has the great advantage of being a one-time method, and, provided it does not cause unpleasant side effects such as pain or bleeding which necessitate its removal, or it is not expelled, or conception does not occur with the device in place, it can serve as an important item in the contraceptive cafeteria. While IUDs of various shapes, sizes and materials have been advocated by different workers, clinical trials with the introduction of a copper wire in the T-device seem to indicate the occurrence of lower rates of expulsion, fewer side effects and reduced incidence of pregnancy than with other devices. The incorporation of progestational steroids in IUDs has also been reported to have considerably lessened the side effects and hence the rate of removal. Nevertheless, the fact that the IUD is not a self-instructional method and needs medical (or at least paramedical) assistance, detracts from its suitability for use in remote areas where medical or even paramedical care is not available.

Even though the mechanical and chemical methods of contraception are now described as "conventional", they are still used by a fairly large number of couples. Especially is this so in the case of the condom because of its easy availability, simplicity of use, cheapness and absence of side effects. The method is still a bulwark in the defences against unwanted pregnancy notwithstanding its relatively high pregnancy rate as compared with oral contraceptives or IUDs. The development of a more aesthetic condom, sufficiently thin yet strong, and impregnated with a chemical spermicidal agent which would ensure a combined mechanical and chemical action would considerably enhance the acceptability and effectiveness of this method which still has a high popularity in many parts of the world.

A recent development in the field of the "conventional" methods is the "Centsquare" from the CDRI, Lucknow. This is a 2-inch square film which is placed in the vagina and which acts as a chemical contraceptive, the spermicidal agent being urea. The advantage is that the method is not messy like the spermicidal jellies and creams, nor does its action depend, as in the case of the foam tablets, on the presence of ejaculate in the vagina.

A method which is still the only permitted resort of certain religious groups is the rhythm method or "safe" period method. Although some couples claim to have been fortunate enough to have been able to plan their families by this means, the more general experience is that the method belies its name with a resultant high failure rate. Whereas in the past the calculation of the "baby days" depended on the careful maintenance of menstrual records and basal body temperature charts, with the development in the near future of more accurate and simple measures for pinpointing the date and even the time of ovulation, it may be possible to increase considerably the effectiveness of this method. However, unless a test can be devised which would accurately forecast the definite absence of ovulation over the next 72 hours, i.e. the maximum period for which spermatozoa can survive in the female genital tract, the method would still be unreliable.

With the liberalization of the abortion law in several countries, interest has focused on devising simpler and safer methods of terminating pregnancy. Among the surgical methods of termination, the use of vacuum aspiration has been associated with less blood loss and less likelihood of perforation. The ingestion of various substances to bring on abortion has been attempted over centuries and the literature and folk medicine abound in the mention of various foods, plant decoctions and drugs which have been ascribed with abortifacient properties. A large number of embryotrophic substances or antimetabolites have been investigated both in animals and in humans from the point of view of their effectiveness in destroying the embryo, but the majority have shown toxic effects on the mother or in some cases, where they have failed to induce abortion and surgical methods have later been resorted to, the embryos have shown gross anomalies. Within the past few years, the prostaglandins (E₂ and F_{2α}) have come into prominence. These are substances which occur naturally in the seminal plasma and which have also been demonstrated in the human amniotic fluid and maternal circulation during labour and spontaneous abortion. They cause uterine contractions and thus bring about evacuation of the uterine contents at any stage of pregnancy from the earliest days of conception until just prior to labour. The use of

the prostaglandins by mouth, intravenous injection or infusion, intravaginal tablets, or intra-uterine infusion, has been advocated not only for termination of a definite pregnancy, but, more significantly, for routine medication once a month, in order to induce regular menstruation as well as to deal with a possible early unsuspected or undiagnosed pregnancy. The use of the prostaglandins has been found to be associated with certain side effects such as nausea, vomiting, diarrhoea and abdominal pain, but provided these side effects can be minimized, the absence of any long-term harmful effects ensured, and the mode of administration made simple enough for any woman to use these drugs without the necessity for medical care, the prostaglandins may play an important role in conception control in the near future.

In India, sterilization of the male, as well as of the female, has played an important part in family limitation, and the effectiveness of the family planning programme in reducing the birth rate depends to a great extent on the number of couples with three children or less who accept this most reliable method of birth control. Among the masses, questions are still raised regarding sterilization — “Will I be potent after vasectomy?” “Will I become fat after the tubes are tied?” “Is it true that some people go insane after sterilization?” and so on. With widespread education in family planning, many of these doubts have been dispelled, but the virtual irreversibility of sterilization still deters many people from taking the decision to undergo the operation.

With the modifications in the techniques of vasectomy and tubal ligation which have made reanastomosis more feasible, and with refinements in the operation of reanastomosis, the chances for success of the operation have increased considerably and have made couples less reluctant to undergo sterilization. The use of the vaginal method of sterilization has reduced the period of hospitalization of operated cases, while the practice of laparoscopic or culdoscopic tubal cauterization holds promise of making sterilization in the female an outpatient procedure as in the case of vasectomy.

Some attempts have been made to block temporarily the vas by the insertion of biowax or silicone rubber plugs (intravasal contraceptive devices) or by the application of tantalum clips. Similarly, attempts have been made to occlude the fallopian tubes by the transcervical application of sclerosing agents, such as quinacrine or even carbolic acid, to the inner ends of the tubes. However, although the idea may be attractive, none of these methods has so far shown signs of replacing the more conventional methods of sterilization.

Finally, an ingenious possibility of conception control, however remote, lies in the use of pheromones — substances which have an inhibiting effect on the hypothalamus and thereby on the reproductive process through the sense of smell. Experiments in animals have shown that the “contraceptive scent” of the future may indeed become a reality and not merely remain in the imaginary realms of a Huxleyian brave new world.

These, then, are some of the prospects for the control of fertility which lie before us. It must be borne in mind that promising laboratory results may not always be applicable to humans and it is essential that careful clinical trials on sufficiently large numbers of human subjects fulfil all the necessary crite-

ria before any anti-fertility drug is released for general use. Many of the methods described are already undergoing clinical trials while other methods will soon be available for experiments in humans, and yet others are still a long way from the stage of being tested in humans.

However, it is not enough that strenuous efforts should be concentrated on the development of better, more effective and safe methods of conception control which can be easily used by the vast majority of people all over the world. In order to ensure that these methods can and will be used by those who should use them, it is essential that certain other important needs of the family planning programme should be met.

Firstly, there is a need for providing services for family planning as an integral part of general services for health and welfare. It has been repeatedly demonstrated that offering family planning advice as an intrinsic part of a general service for health care and family welfare is much more acceptable and therefore more effective than offering family planning as an isolated service. Maternal and child care services with special emphasis on immunization and nutrition programmes are the most natural services into which family planning can be integrated. A woman who receives care during and after her pregnancy, and whose baby is protected against such diseases as tuberculosis, smallpox, whooping cough, diphtheria and poliomyelitis, develops confidence in those who provide this care and is more likely to follow their advice concerning family planning than if she were approached by a family planning worker who appears to be merely interested in achieving high figures for sterilization.

The hospital post-partum programmes which have commenced in several countries have amply proved their worth by bringing about for a wide section of the community, better-organized services and education for family planning associated with maternal and child care. Similar integrated services can be extended to smaller hospitals, maternity homes and dispensaries. This would require that every family planning worker be trained in maternal and child care and every MCH worker have training in family planning. So also, every family planning worker must be alert to the health problems in the community in which she works, while every health worker, whether in the field of tuberculosis, malaria, smallpox or leprosy, should be aware of the need for identifying and motivating those couples who are eligible for contraception or for sterilization. All this calls for good team work and for a broader outlook regarding one's job.

Secondly, there is a need to use all three available approaches, viz. the mass, group and individual approaches, in educating and motivating people to use family planning methods. In the early years of the family planning programme in India, the accent was on trying to reach individual couples to motivate them to plan their families. However, it was soon apparent, on the one hand, that this was a slow, laborious process and, on the other, that individuals were often influenced by the group to which they belonged, and especially by the leaders of that group. Another aspect of the family planning programme which has tended to be isolated from both the individual and group approaches is the use of mass media for family planning publicity. Each of these three methods has its rightful place and a judicious combination of all three methods can be more effective than using them in isolation or in competition with each other. The mass methods create

enormous awareness about family planning among the people. Questionnaires administered to children in high schools in Bombay have shown that even school children are familiar with the red triangle and the slogan "Two or three children are enough", and that they themselves would like to have small families when they marry. Awareness is, however, not enough. It must be followed by knowledge and understanding. For this, what is needed is to meet with small groups, pick out leaders of the community and train them to assist in clearing doubts and misbeliefs, in counteracting rumours and in motivating the community to accept family planning. The next step for the family planning worker is to contact individual eligible couples, strengthen their knowledge about family planning and motivate them to accept a method, try it out, and eventually become convinced and regular users of that method.

And, finally, there is a need to reach young people, whether through the formal system of education or outside that system, with accurate facts relating to population, sex and contraception. The runaway figures of the eleventh decennial census of India have brought sharply into focus the fact that, in spite of all the resources which are being poured into the family planning programme, we are unable to stem the flood of increasing population. By the time that we have dealt with the 100 million couples in the reproductive age group, a new group of entrants has appeared, and the work of education and motivation has to commence all over again. In the time taken to reach and motivate all of the 100 million eligible couples, they have already been adding to the population more people than desired, so that the population is always ahead of our efforts.

In the past few years, much discussion has centred on the need to concentrate attention on the education of the next generation with regard to population dynamics, the effects of over-population on both national and family welfare, and the need for responsibility in deciding on family size. So also, there is a need for young people to be given accurate information regarding the facts of human reproduction and to understand their responsibility as intelligent human beings endowed with the power of procreation. With an extensive and intensive programme of population and family life education, it should be possible to reach each oncoming generation of parents in good time, to educate and motivate them towards having small families, and thus to avoid the frantic haste which characterizes our present programmes of family planning.

It is essential that we meet all these needs with persistence and sincerity of purpose if the programme for family planning is to succeed in its ultimate aim of helping us make for ourselves a more sane and well-ordered world.

EUGENICS: ITS ROLE IN FUTURE FAMILY PLANNING IN ASIA*

by

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The population of most countries of the Asian part of the ESCAP region is increasing at a rapid rate in spite of family planning efforts. Under current conditions no significant decline is likely to take place in the 1970s. It is expected that in many developing countries, total requirements for future health, education, housing and numerous other welfare needs are bound to increase beyond capacity. Thus, the lowering of population growth rates as an essential element of social and economic planning has become the objective of many Governments of the region. However, relatively little attention has been paid to the qualitative aspects of population problems.

Demographically, the rapid population growth is attributed to a rapid decline in mortality, while fertility has remained almost constant. As a result, a greater proportion of the children born can now survive and reach maturity than formerly. Genetically speaking, this tendency may relax the intensity of natural selection and gradually alter the genetic quality of future generations. The spread of family planning, which is most urgently needed for the social and economic development of these countries, will necessarily change the population's reproductive pattern and this in turn may have some genetic consequences. Such effects imply some impact on the physical and mental well-being of future generations, often ranging over a long period. In order to plan population policies and programmes adequately, it is necessary to take into account all these possibilities, and to choose the best possible way of contributing to the well-being of the population, both present and future. The science of eugenics can help in this, since it concerns itself with the genetic quality of future generations. The purpose of this paper is to review the past and current concepts of eugenics, and to outline their implications for family planning programmes in Asian countries.

Eugenics in the past

Eugenics had begun to develop before the science of genetics proper started with the rediscovery of Mendel's laws of inheritance. Francis Galton, who coined the term eugenics (from Greek eu: good or well, and -genes: born) in 1883, defined it as "the study of the agencies under social control that may improve or impair the racial qualities of future generations, either physically or mentally." Today the word "racial" is better replaced by "genetic." Galton was greatly influenced by his cousin, Charles Darwin. After reading *The Origin of Species*, he foresaw the fatal consequences for mankind if the effects of natural selection were gradually relaxed by the developments of civilization; with increasing improvement of medical care and public health services, conditions

* The opinions expressed in this paper are the author's own and do not necessarily reflect the views of his organization or those of the ECAFE secretariat or of the United Nations.

would easily be created for the "unfit" which enabled them to breed offspring, while the "fittest" would reduce the number of their offspring. Therefore, the substitution of social control for natural selection in guiding human evolution was for Galton "the logical application of the doctrine of evolution to the human race." He proposed fellowships for able students, so that they might marry and produce a family. He gave consideration to special inducements to superior young people to raise large families. Through his studies of hereditary genius and *inquiries into human faculty*, Galton became convinced that heredity was an important cause of variations in physical, mental and moral qualities.^{1/2/} At that time, however, the great complexity of the interplay between heredity and environment for the formation of socially valuable characters was little understood. While Galton emphasized the need for further study and education on eugenic lines, he apparently failed to recognize the environmental disadvantages of the British lower classes, and attributed their low performance to poor heredity.

Eugenic principles soon reached to other countries from England, often undergoing certain changes on the way. While in England greater emphasis was put on "the good human stocks" whose propagation should be encouraged, in the United States the early development of eugenics was associated with an idea of the existence of particularly harmful and dangerous families such as the Jukes and the Kallikaks. Those families were thought to be very expensive to society, and there seemed to be the need for laws to restrict the breeding of "degenerate" stocks. Confronted with the difficulty of assimilating the great wave of immigrants from southern Europe in the years around 1910, the eugenic argument was overworked in national legislation, resulting in the Quota Act, as well as in state legislation on sterilization. The evidence for heredity was based on inadequate studies, and racial prejudices corrupted the nature of the evidence.^{3/} Thus, eugenics in the United States has unfortunately not escaped misuse.

In Germany eugenics took a most disastrous course. As the subject was introduced into that country towards the end of the nineteenth century, it was combined with the concept of "racial hygiene." This underwent a complete metamorphosis under the Nazi regime, and ended with a catastrophe in 1945. Pseudo-scientific theories developed of the "supremacy" of the Nordic race led to the most savage persecution of other "inferior" races. At the same time, the "worthless" element of their own was subjected to euthanasia for the sake of racial hygiene. The disgrace brought about by the misuse of eugenics was such that the word has been taboo until recently.

On the other hand, in the Scandinavian countries and in Switzerland, where various eugenic provisions were introduced in the late 1920s and thereafter, eugenics has been viewed as a purely medical subject with the sole task of preventing disease. In these countries, eugenic measures have been taken, on the principle of voluntariness, in connexion with progress in public care and medical genetics, and in Denmark also by the establishment of a genetic-hygienic register since 1938. This form of eugenics was termed "genetic hygiene";^{4/} it is the forerunner of genetic counselling now being widely practised in many developed countries.

^{1/} This number, and subsequent numbers, relate to the biographical references at the end of the paper.

In Japan, eugenics has developed gradually since around 1930, when the Society of National Hygiene was established by a group of leaders in the medical field. The Society, while disseminating a proper knowledge of eugenics, endeavoured to bring out a sterilization law in this country. As a result, the National Eugenics Law was enacted in 1940 with the principal aim of preventing the increase of severe hereditary diseases. It provided a legal basis for performing sterilization in cases of certain hereditary diseases and abnormalities of a physical or mental nature. The Law has been used with great caution and, accordingly, to a limited extent; the number of sterilizations performed during the period 1941-1945 was only 454, while the number of applications for sterilization during the same period amounted to 712.^{5/} As soon as the Second World War ended, Japan faced overpopulation and economic collapse, and the Law was replaced in 1948 by the Eugenics Protection Law which contained additional provisions for regulating induced abortions for the protection of maternal health. Since then, the new Law has been widely utilized for family planning, rather than for eugenic purposes. This is not, however, to say that the new Law has been of little eugenic significance in Japan. As will be shown later, there is some reason to consider that the spread of family planning practices induced by the Law has resulted in appreciable eugenic side effects upon the health of the nation.^{6/}

Current concepts and applications of eugenics

We have seen that eugenics in the past was crude and oversimplified because of the lack of genetic knowledge, and has been harmful when associated with racial and emotional prejudices. Owing to the development of the science of genetics, including human genetics, it is now much more soundly based. At the same time, it has become clear that the scope of eugenics is much more limited than was thought by earlier eugenicists, for both theoretical and practical reasons.

The field of eugenics is subdivided into two branches: preventive and progressive eugenics.^{7/} The former aims at keeping the frequency of hereditary diseases and disabilities as low as possible, the latter devises measures to increase the frequency of genes causing desirable characteristics or at least to guard against their decrease. Trends which improve the genetic quality of a population are called eugenic; and those which are thought to cause it to deteriorate are dysgenic.

Preventive eugenics

It is important to realize that eugenic measures will never exterminate hereditary diseases and disabilities. Spontaneous mutations, the coming together of heterozygous carriers of recessive genes and other factors will always bring about new cases. Studies on children from consanguineous marriages have shown that every individual conceals some recessive genes, perhaps 2-5 on average, which would be lethal coming together in a homozygous form.^{8,9/} Furthermore, civilization tends to increase the frequency of those genes, because natural selection is becoming more and more relaxed, and because various kinds of mutagenic agents have been introduced into our environment. Most of the induced mutations are known to be recessive, and they are more or less harmful in homozygous form. We can only hope, therefore, that should eugenic measures be applied,

hereditary diseases would become less frequent or that the frequency would increase more slowly than in the absence of such measures. From this point of view, the first eugenic policy which should be taken by every country is to achieve the best possible control of mutagenic agents in civilized environment, whether physical, such as X-rays and other ionizing radiations, or chemical. Since the importance of this aspect is well known, no further account is given here.

The usual measures in preventive eugenics are various means of contraception, sterilization and induced abortions (if legally permitted). They should be taken, on a voluntary basis and in connexion with genetic counselling, as an integral part of medical care services. At present, more than 1,500 diseases are known to be genetically conditioned, of which about 700 are inherited as single gene differences and others occur in association with environmental factors.^{10/} In addition, various chromosomal aberrations are known to occur, mostly by *de novo* mutations. Their phenotypes are extremely variable, ranging from a very minor anomaly to a lethal or sterile condition. The evaluation of individual conditions for applicability of measures such as sterilization must take into account many factors: the risk to prospective children, the curability of the disease, the degree of suffering of the person concerned. Furthermore, the subject may have some very valuable genetic traits other than the condition in question, so that a balance must be struck with great care. Certainly, there are not many hereditary diseases that may be defined as severe enough to impose, by impairment of physical or mental health, an unreasonably large burden on individuals, families and society. Table 1 shows the list of such diseases which forms the annex to the Eugenics Protection Law in Japan, for which sterilization is indicated under certain conditions.^{11/} There may be, in the light of the recent progress of medical genetics, some other hereditary diseases and chromosomal abnormalities to be added to the list.

Recent advances in the field of cytogenetics and biochemical genetics have now led to the pre-natal diagnosis of certain hereditary diseases. This has enlarged the opportunities for preventive eugenics in those countries where induced abortions are legally permitted. By working with foetal cells obtained through amniocentesis during the thirteenth to fifteenth week of gestation, it is possible to detect both chromosomal aberrations and inborn metabolic errors such as Pompe's disease, Hurler's and Hunter's syndromes, Tay-Sachs disease, galactosemia and Lesch-Nyhan syndrome.^{12/} All of these disorders are associated with mental retardation, and the likelihood of recurrence is generally 25 per cent for parents who have had already an affected child, since they are inherited as autosomal recessive traits. In addition, sex diagnosis can be made quite easily by staining uncultivated foetal cells with fluorescing dyes; this method has been used for the management of pregnancies in women heterozygous for X-linked recessive disorders, such as haemophilia and muscular dystrophy. Other indications for amniocentesis have been proposed for the following groups of parents with a certain risk of having an afflicted child: (a) a parent with translocation chromosome such as D/G or G/G, (b) a mother over 40 yr of age, for whom the risk of a child with Down's syndrome is greater than 1 per cent, and (c) a mother who has had a previous child with a chromosomal defect and who is over 35 yr of age.^{12/} At the present stage the indications for pre-natal diagnosis are still limited, but its prospective role in preventive eugenics seems to be great as the number of detectable diseases is steadily increasing.

Progressive eugenies

Progressive eugenics emphasized in the past that individuals with more desirable genetic characters should be given incentives to have more children. While it is true that socially and culturally valuable characteristics, such as intelligence and artistic talents, have certain genetic bases, it is also true that environmental conditions play a considerable role in the development of these characteristics. The extent to which genetic differences among individuals cause phenotypic variations differs from society to society, depending upon the degree to which "equality of opportunity" is provided for all members. It is also obvious that many behavioural characters, such as good manners, well-developed social sense and mental health, depend mainly upon education and training in early life. Therefore, the emphasis in progressive eugenics is now placed on education and on the betterment of social environments along eugenic lines. The WHO Expert Committee on Human Genetics suggests as follows: "...although circumstances vary widely in different countries, each country may wish to give thought to the removal of those social obstacles to reasonably early reproduction that bear unfairly upon certain sectors of the community. More specifically, it is desirable that reasonably early founding of a family should not be denied to any groups entering into various activities necessary for the cultural, social and economic well-being of the community."^{13/}

Consanguineous marriages

It is well known that consanguineous marriages lead to increased risks of illness, premature death, and congenital abnormality in the children. This is because the likelihood of the coming together of pairs of harmful recessive genes is greater in the child from consanguineous marriages than in the child from unrelated parents. Therefore, if consanguineous marriages become less frequent, there would be a reduction in mortality and morbidity in the population. The reduction rate depends upon the present frequency of consanguineous marriages and their reduction rates, as well as the increased rates in the relative risks to the children from such marriages. The results of recent studies in Japan all showed that the extra risks are not very great.^{14,9,15/} For example, mortality among children during the first six years after birth was found to be 10 per cent among children from first-cousin marriages, against 6 per cent among the controls, while the risk of death caused by congenital abnormalities was 1.7 per cent in the former as compared with 1 per cent in the control group. A very striking fact is that only a few of the deaths were due to recognized recessive conditions. Even if the extra risks are not very great in the cases of individual couples, they are not insignificant from the viewpoint of the community as a whole. Assuming that the present level of first-cousin marriages is 5 per cent (which it is in some urban areas in Japan), and if all such marriages are avoided, child mortality would decrease by about 3 per cent.

On the other hand, the decrease in consanguineous marriages is dysgenic, as it should result in an increase of rare recessive genes carried by heterozygous persons, that would otherwise have been eliminated in homozygous form. However, the rise in gene frequencies would be very slow and its possible long-range effect is not predictable.

Eugenic implications for family planning programmes

The practice of family planning usually spreads more rapidly in some social strata than in others, and more rapidly among better-educated than among poorly educated groups in the society. This would, in all probability, result in fertility differences, and if these were correlated with some genetically determined traits such as intelligence, the genetic composition of the offspring population would be altered in a dysgenic direction. Therefore, the first eugenic goal of family planning programmes is to ensure that all information and measures necessary for family planning are equally available to all individuals in every class of the society.^{3/}

If family planning comes to be practised more and more, a trend is likely to emerge for child-bearing to be concentrated in the 20-30 year age group. The effect of this trend is known to be beneficial to the health of mothers and their children, as measured by indices such as maternal mortality and morbidity, foetal wastage and prematurity. In addition, it is of obvious eugenic relevance, because it reduces the production of new mutations that are correlated with parental ages. There are strong positive associations of maternal age with the production of certain chromosomal aberrations: Down's syndrome, Klinefelter's syndrome (XXY), triple X female, 13-trisomy and 18-trisomy syndromes.^{16,17,18/} Furthermore, paternal age is known to have a profound influence on the mutation rates for certain dominant conditions: chondrodystrophy, acrocephalosyndactyly, fibrodysplasia ossificans and arachnodactyly.^{19,18,20/} Of these, Down's syndrome, and XXY and XXX conditions are the most important in practice, because they are quite common and associated with mental retardation.

In order to illustrate the extent to which changing parental age patterns may bring about a benefit in terms of the public health of a population as a whole, an example is here given from demographic data in Japan. Table 2 shows the maternal age distributions in selected years and the relative incidences of Down's syndrome, XXY and XXX conditions by maternal age. The proportion of mothers aged 19 years or under decreased from 6.0 per cent in 1925 to 1.2 per cent in 1968, and that of mothers aged 35 years or over decreased from 20.5 per cent to only 4.8 per cent during the same period, resulting in a slight decline in the mean maternal age but in a marked decrease in the variance. On the other hand, the relative incidence of these abnormalities is rather low until the mother reaches the age of 35 years, and then it rises almost exponentially as the mother approaches the menopause. The pattern of association in Down's syndrome has been found to be essentially the same in eleven countries suggesting that the underlying mechanism is purely biological irrespective of ethnic and cultural factors.^{21/} It is to be noted that, for reasons not yet clear, the association with maternal age often shows a J-shaped pattern, the risk being slightly higher for children born to very young mothers; this tendency has also been observed for XXY and XXX conditions. From the data of table 2 it may be deduced that the frequency at birth of these abnormalities must have decreased by 30-40 per cent in Japan during the past forty years. Since they occur collectively once in every 300-500 births, a reduction of incidence of this magnitude by family planning would represent a major saving in medical care and in suffering. This

suggests that family planning should be more actively encouraged for women over the age of 35 years and also for very young women.

On the other hand, there may be dysgenic effects of family planning, arising mainly on account of the relaxation of natural selection. Natural selection takes place through differential mortality and fertility among different genotypes. Theoretically, if each couple had the same number of children that can survive and procreate, natural selection due to genetic differences between families would be removed, the component due only to within-siblingship difference remaining, so that deleterious genes produced constantly by new mutations affecting both viability and fertility would accumulate in the gene pool of the population.

Table 3 gives some demographic data for Japan, showing the change of the reproductive pattern of married women during the last fifty years. The average number of offspring per woman born in 1871-1875 was 4.6, while the corresponding figure of currently reproducing women is only 1.8. Even more marked is the decrease in the variance from 8.4 to 1.1 during the same period. Based on these data, the index of selection intensity for fertility component may be calculated according to Crow's formula: this is the ratio of variance of number of parity to the square of the mean number of parity.^{22/} The value has decreased from 0.40 to 0.33. This does not necessarily imply that natural selection due to differential fertility has been relaxed to that extent, for two reasons. First, the index itself provides only the upper limit, and not the net intensity of genetic selection. Second, the loss of variation in the number of children in countries where family planning has been widely adopted should be regarded as representing social conformity rather than genetic homogeneity. It is felt, therefore, that the population will scarcely lose its variability as to fecundity, and could resume high fertility if social needs so required.

However, selection through differential mortality has certainly been relaxed by modern improvements in medical care services, particularly by the remarkable decrease in infant mortality in many countries. In Japan, for example, the infant mortality per 1,000 births was over 150 until 1925, but it has steadily declined since then and is now only 13. The index of selection intensity due to infant mortality may be calculated according to another Crow formula: this is the ratio of the mortality to the survival rate. The value has dropped from 0.18 to 0.01 during the past fifty years. It is clear that this tendency will be stronger in the future. But the question of the magnitude of its possible long-range impact on the society cannot be answered.

Another aspect of possible dysgenic effects is concerned with the question whether oral contraceptives have mutagenic effects. At present, data concerning this point are very limited. It has been reported that there is an increase of triploidy among spontaneous abortuses from women who conceived within six months of discontinuing oral contraceptives: triploidy is a condition consisting of three sets of chromosome complements, instead of two in the norm.^{23/} However, data from another study based on induced abortuses showed no occurrence of triploidy among samples from contracepting women.^{24/} Clearly, further studies are needed. It should be noted that triploidy is always lethal in the embryonic stage, so that, even if the earlier result is confirmed, an increase in chro-

mosomally abnormal surviving infants would not be expected. There has been no evidence that oral contraceptives could induce other chromosomal abnormalities which would not be lethal.

Finally, in those countries where family planning is encouraged by the Government on a large-scale, it is possible for individual couples to make eugenic use of this situation. They could be conditioned by popular education on genetic matters of public health importance and by genetic counselling as medical care services. If competent instructors are available, it is desirable to organize educational programmes in human genetics as part of population education in schools and universities. The curriculum should include an elementary knowledge of human genetics, explaining genetic risk, the responsibility of parenthood and the possibilities of preventing the birth of afflicted offspring. The instructors should keep in mind that eugenics was in the past often misused as an apology for racial prejudice, and that no individual is genetically perfect, and may explain genetic facts without arousing unnecessary feelings of fear, shame or guilt among the audience.

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Table 1. List of hereditary diseases annexed to the Eugenic Protection Law

1. Hereditary psychosis:	
Schizophrenia,	Manic-depressive psychosis,
Genuine epilepsy	
2. Hereditary mental deficiency	
3. Remarkable hereditary psychopathia:	
Remarkable sexual abnormality,	Remarkable criminal inclination
4. Remarkable hereditary physical disability:	
Huntington's chorea,	Hereditary spinal ataxia,
Hereditary cerebellar ataxia,	Neural progressive muscular atrophy,
Progressive muscular dystrophy,	
Congenital myotonia,	Achondroplasia,
Congenital myasthenia,	Albinism,
Congenital ichthyosis,	Neurofibromatosis,
Epiloia,	Epidermolysis bullosa hereditaria,
Congenital porphyrinuria,	
Keratoma palmare et plantare hereditarium,	
Hereditary atrophy of the optic nerve,	
Pigmentary degeneration of the retina,	
Total colour blindness,	Congenital nystagmus,
Blue sclera,	
Hereditary hardness of hearing or deafness,	
Haemophilia	
5. Severe hereditary malformation:	
Split-hand; split-foot,	Congenital defects of the bone

Table 3. Number of offspring of selected cohorts of married women in Japan, with genetic implications (Matsunaga, 1969)

Parity	Percentage distribution, by parity	
	Women born in 1871-1875	Expectations of women under age 40 yr in 1962
0	10	5
1	8	45
2	8	33
3	11	12
4	12	3
5	12	1
6 and over	39	1
Total	100	100
Mean	4.7	1.8
Variance	8.4	1.1
Index of selection intensity for fertility	0.39	0.33

Table 2. Changing maternal age patterns in Japan since 1925 and relative incidences of certain trisomy syndromes

Maternal age										Relative incidence		
	-19 yr	-24yr	-29yr	-34yr	-39yr	-44yr	-49yr	Mean <u>a</u> /	Variance	Down's syndrome	XXY and XXX	
Percentage of births:												
1925	6.0	27.2	26.6	19.7	14.1	5.7	0.7	28.4	45.5	100	100	
1937.	2.9	24.6	30.8	21.4	14.5	5.2	0.6	28.9	39.3	98	99	
1948	2.7	25.7	30.5	21.8	14.3	4.6	0.4	28.7	37.8	94	94	
1958	1.1	27.6	44.4	19.6	6.0	1.2	0.1	27.3	21.9	66	71	
1968	1.2	25.2	49.2	19.6	4.3	0.5	0.1	27.1	17.8	58	66	
Relative incidence:												
Down's syndrome	0.40	0.61	0.55	0.82	2.33	5.20	10.0					
XXY and XXXb/	0.57	0.44	0.75	0.91	1.71	5.28	11.0					

a/ Calculated using central values of the 5-year intervals

b/ From Penrose, 1964.

PROBLEMS AND PROSPECTS OF FAMILY PLANNING PROGRAMME BACKGROUND — INDIAN EXPERIENCE*

by

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A review of family planning services has a meaning if it is undertaken in the context of the particular programme in which the services operate. The review should examine the key elements that constitute the programme. What are its implicit objectives? How are the objectives to be achieved? What are the strategic and operational plans? How are the services designed? What are the types of work units envisaged and their locations? How do they develop and function? Is there a critical mix and mass of workers in position? What skills are needed and how is training given for the purpose? How well are the functions of management, supervision and co-ordination developed? Are supplies and facilities for work and for consumer use adequate?

These are some of the basic queries that form the ambit of the review. Answers to many cannot be obtained from service statistics or casual observations. Some can be obtained only through special studies, certain of which entail highly sophisticated methodology. For others there is no substitute but learning from long practical and operational experience.

In a family planning programme one can identify three major power structures within which decisions are taken and actions are performed. These are the "policy administration group", the "service implementation group" and the "target group". Each group perceives the programme somewhat differently and places a different degree of emphasis about its objectives. These variations in perception are likely to raise barriers, blocking effective interlocking of decisions and actions to be taken specifically within a group, and thereby interfere with a unified effort towards the desired goals.

The policy management group, usually placed within the ministry of health, views the programme from a broad national perspective. The basic philosophy that is adopted colours the way that the programme is designed and the way that the services develop and function. If the policy aim is primarily to upgrade family welfare, particularly that of maternal and child health, then the inputs are provided to fulfil that purpose. The health services are augmented so that they may extend their scope to include elements to propagate the small family norm, encourage the use of contraceptives and provide contraceptive technology; these as integral components of functions are related to maternal and child care work.

As the objectives of the programme are shifted from health welfare orientation to demographic goals of reducing birth rates for the purpose of population

* The opinions expressed in this paper are the author's own and do not necessarily reflect the views of his organisation or those of the ECAFE secretariat or of the United Nations.

control, there owns significant changes in operational strategies, reflecting on the way that the services perform their functions. The first step is the process of making projections of the number of births that should be prevented over a stipulated period through use of contraceptives. Of the known contraceptive methods, some are selected for use in the programme. The selection is done on the basis of what the law will permit and culture will tolerate, on the assessment of methods which will be more readily accepted. The decisions, however, are somewhat *ad hoc*, biased and reached with little operational research. The methods chosen are then assigned assumed hypothetical values in terms of birth prevention. The next step is to lay down targets to secure acceptors of each method and the targets are then divided and quotas distributed to service units. Even the target-setting lacks the rationale of feasibility and information about acceptance trends.

The demographic objective and the operational plans to achieve the targets come up against the variance of entrenched attitudes and of group and individual behaviour. According to the expectations of population policies, human beings sometimes appear to behave irrationally. The decision and requisite action to control fertility ultimately rest with individuals. But the behaviour of individuals does not follow a consistent pattern; nor does it to what others consider to be desirable. Each one is influenced by personal factors, such as his expectations and cherished aspirations and values. He is at the same time influenced by factors arising from his environment, and from his society, religion and culture. In seeking to change his attitude and behaviour one would need to manipulate those factors—a by no means easy process calling for a variety of skills. The programme thus calls for inputs from a number of disciplines which transform it into a structure of complex facets, the effective management and administration of which requires modern methodologies. However, it is not easy to introduce new managerial concepts, especially within established bureaucratic systems.

Policy formulation and planning of a social programme like that of family planning must be a continuous process of trial and innovation and must be able to respond to different and changing local conditions. Its management should have a two-way flow of communication and particularly receive quick feedback from the field. In practice one finds that centralized management works somewhat in isolation and lack of a good monitoring system further aggravates the situation. Central management tends to create an elaborate framework with rigid patterns for organization and work. Further, it allows little authority of decision-making to lower echelons, and they cannot take the initiative to respond to local needs and introduce necessary modifications. As a result, work at the peripheral units often continues at low productivity.

The implementation service group is exposed to a variety of impulses and pulls. The pervasive orientation of the health cadres is that of professional responsibility to provide medical and health care to people. It is easier for them to work for family planning if they see it as an extended element of their basic responsibility. Particularly if it is seen as a significant aid in raising maternal, child and family welfare. The problems start when the programme adopts its major emphasis as one for achieving demographic goals. The promotion of contraceptive use through advice for upgrading of health and welfare now changes its context to that of admonition and exhortation. The health cadres find it psy-

chologically difficult to function for such objectives and accept constant administrative pressures to fulfil targets. They, over time, get little professional satisfaction if they find their work is mainly confined to the provision of contraceptive technology. Another cause of stress on the health services is the induction of new categories of workers in the service structure and the necessity to link the functions of demographers, statisticians, media experts and others into conventional health activities.

The target group is exposed to direct and indirect influences exerted by several "sub-power" structures. There are the social, economic, religious and cultural factors that bear on individual ethos. There are the leaders in society whose opinions carry potent weight. Within the family complex are the elders, the patriarch, the mother-in-law whose sagacity and advice are difficult to ignore. In sub-cultures where the male pre-empt a dominant role, the woman depends upon the husband to make decisions in matters related to marital sex and consequential fertility.

Every society evolves certain norms for family structure and of number and sex of children that are ideal for a family. These norms develop from accumulated experience and reflect societal needs. People in that society by and large adopt the norms and also know of necessary measures that will help them to have a family of the size that will roughly conform to their expectations. Some of the fertility regulation measures that are practised involve a high level of discipline which may be self-imposed or instituted by society. Since fertility control measures are not unknown practices the problem for a family planning programme perhaps are less in acceptance of modern contraceptive methods. These lie more in bringing in a change in the entrenched bio-social norms about family size and structure and particularly so in traditional societies. The decisions on fertility behaviour rest finally with individuals who in turn are influenced by perceptions that filter down to them from the several pressure structures.

Indian family planning programme

At this point, a brief survey of India's family planning programme may provide useful background for purposes of discussion and to draw some conclusions.

The Government of India recognized the implications of unchecked population growth for its economic and development plans and was the first country to adopt a family planning programme as an integral feature of its Five-Year Plans. The programme was started in the First Plan period as early as 1951. It consisted of the opening of some family planning clinics where contraceptive advice was given to those who came and sought it. In the initial stages the approach was very conservative. However, a dramatic change occurred in 1965 when a decision was taken to give the programme a new shape, operate an active outgoing extension methodology and greatly expand its resources. To bring in these dimensions a separate Department of Family Planning was created in the Central Health Ministry in April 1966.

The programme is developed as an integral part of health services, in particular with MCH work. Under the Indian Constitution, the responsibility for health activities rests with the State Governments and consequently so also for family

planning work. However, currently the entire cost of family planning component is borne by the Central Ministry. Besides the financial control the Central Family Planning Department plays a dominant role in policy-making and directing its implementation. Additionally, it controls major functions in research, mass communication, supplies etc. It also manages the project of commercial distribution of Nirodh (Condom).

The Central Ministry thus issue directions but for execution the Centre is virtually dependent upon the States. In the States, family planning bureaus have been authorized within the Health Directorates for management of inputs, co-ordination and general supervision. Further down, District Family Planning Bureaus play the key role in supervision and direction of field work which is carried out at service outlets.

In 1969 a family planning component was sanctioned for post-partum care in selected hospitals and this arrangement is operative in 122 hospitals. Additional inputs have been given to 17 districts for intensive family planning work and in due course the scheme will be extended to 34 more districts. By these measures 51 heavily populated districts, containing one third of the country's population, will be covered with intensified efforts. The Department has also initiated several other sub-programmes to accelerate acceptance and facilitate delivery of services.

Special Government organizations like the Defence Services, Railways, etc., have internally administered family planning programmes and receive financial support from the Central Health Ministry for this work. Voluntary organizations, local bodies, public and private sector undertakings, plantations, mines etc., are encouraged to set up family planning services and provided with material and financial support.

Organization

The expanded programme envisaged the formation of a network of a variety of units at various levels performing specified functions. There has been a steady progress to build up the organization but in the States the pace has not been uniform. In some the prospects continue to be poor. In rural areas there are problems that beset progress, particularly in the formation of sub-centres. Amongst them are difficulties in the construction of clinics and residences for workers and non-availability of the alternative of hired accommodation. Workers are mostly reluctant to be posted to remote rural areas and in many states there is a paucity of trained workers. The reasons of slow growth in urban areas are mostly those of bureaucratic inertia and a low level of bureaucratic commitment to the programme.

Manpower

The Centre has stipulated that in the formation of the organization a variety of posts be created at various levels and has prescribed requisite qualifications for each category. As new elements of activity are added the creation of further necessary posts is permitted. Accordingly there has been a steady increase in the number of personnel working in the programme. However, it may be noted

that many of the key positions remain unmanned. This is true of the Central Department and it becomes more marked in the States.

The reasons for the deficiency are not that there is lack of candidates with requisite qualifications but that the States do not create many of the required posts. Further the selection procedures are such that long delays occur in filling up the created posts.

The deficiencies are still more marked in rural areas. Recruitment of physicians and their utilization poses special problems. Their undergraduate training is heavily biased to clinical work and little to community health and so they lack both the skills and inclination to work in the field and be effective. As far as the para-professional groups are concerned their output falls far short of the numbers that are needed in the field. A besetting problem is the reluctance in all categories of personnel to work in rural areas under conditions which are often exacting.

Training

From the very inception of the programme training has received high priority. To handle the training requirements there are 5 Central Institutes, 44 Regional Training Centres and 16 Mobile Central Family Planning Units.

The central institutes provide leadership, guidance and technical assistance to regional training centres to develop their capacity for systematic state-wide training and also train the trainers of these centres. The institutes also train key personnel working at State and District levels and in establishments in Railways, Defence, etc.

The regional training centres are the major training resource for the personnel in the programme. Many of them, however, are inadequately equipped and in many of them important staff positions have remained unoccupied. There is also the paradox that though a sizeable proportion of the field personnel remain untrained, these centres are not working to full capacity. It is reported that more than 50 per cent of the training centres function at below 25 per cent of their capacity. The programme administrators in the field are reluctant to release personnel for the inservice training as it takes them off the tasks of achieving targets.

Budget and expenditure

The budget and expenditure of the programme since its inception has been increasing and since 1966 shows a sharp rise (Table 1).

Acceptors

In the early years of the programme the contraceptive methods that were offered started with the rhythm method and went onto condoms, diaphragm, jelly, foam tablets and in 1956 sterilization. In 1965, IUCD was added after it had been clinically tested for over a year. In 1966, an exercise was done about

TABLE 1
Budget and Expenditure on Family Planning Programme in India

Period	Outlay (in million rupees)	Expenditure (in million rupees)
1951-56	6.5	1.45
1956-61	49.7	21.56
1961-66	269.67	248.60
1966-67	149.30	134.26
1967-68	310.00	365.23
1968-69	370.00	305.15
1969-70	420.00	381.81
1970-71	520.00	472.34
1971-72	606.05	*

*Figure not yet available.

the objective of reducing birth rates on a stipulated decline over the next decade and accordingly annual targets were made to secure contraceptive users. It was decided to vigorously promote a "cafeteria" of methods. These were classified in three major categories: Sterilization with more emphasis on males, IUCD and conventionals—mainly condoms.

The acceptance of IUCD at the start was dramatic and the number of insertions reached a peak of over 0.9 million in 1966-67. Thereafter, its acceptance declined, stabilizing at an annual rate of less than half a million.

The performance of sterilization touched the peak at 1.84 million in 1967-68, thereafter, it declined and again rose in 1971-72. The percentage of female sterilization was about 11 per cent in 1966-67 and about 25 per cent in 1971-72.

The acceptor rate for conventional contraceptives has continued to rise. In this group, the condom under the brand name of Nirodh has been particularly successful, and the number of acceptors of other conventionals remained static or declined.

There are several reasons that may explain the initial high acceptance of IUCD and followed by a decline. Its introduction in the programme was enthusiastically promoted by the workers and enthusiastically accepted by women. But skills in screening the women and insertion techniques were not uniformly good nor were follow-up services in rural areas adequate. As number of insertions increased *pari passu* the number of women with complaints from it increased and many without supportive care and assurance. The unhappiness with the IUCD thus accumulated and led to a spread of rumours and dispersal of complaints which acted as potent anti-propaganda. At the same time, the professional

group found its workload increasing in dealing with the mounting mass of complaints and became disenchanted with the method. The decline in the performance of IUCD thereby was due to a decreasing toleration to its ill-effects by the profession and acceptors.

The pattern of sterilization acceptance shows a somewhat similar phenomenon of an increasing curve followed by a drop. The rise in 1971-72 is due to the approach of short and intensive camps. There are some new ingredients added in such camps which are based on the experience of a pilot project undertaken in Ernakulam District in Kerala State in South India and implemented in November 1970. The outstanding features of the project were that the District Collector — Head of the District bureaucracy — undertook its direct responsibility. He used his authority to mobilize all necessary government machinery and his prestige to stimulate and secure active co-operation from civic and other elected bodies, public and private undertakings, commercial organizations, voluntary and social bodies. Each acceptor was given an "incentive" of cash and foodgrain, etc. to the value of over Rs. 100, the normal being Rs. 15 only. By involving key leaders in the communities and skillful use of publicity techniques, the project created an atmosphere of mass approval and social pressures induced to promote vasectomy and secured large number of acceptors. In 1971-72, several States were allowed to hold camps on similar lines. Perhaps the crucial factor in attracting large number of acceptors in these camps is the comparatively high value of "incentive" in cash and foodgrain, etc.

The increase in acceptors of Nirodh is due to a more intensive free distribution by workers. The additional factor is the introduction of the Commercial Nirodh Marketing Programme started in September 1968. Under this project six of the country's premier companies experienced in dealing with consumer goods were invited to market Nirodh through their commercial channels. Each company was allotted a zone in which to operate. The Department supplied Nirodh in "ready to sell" packets and heavily subsidized the cost so that the sale price was kept very low. The sale promotion and publicity through mass communication channels was undertaken by the Department. The companies (except for handling charges) provided at no cost their marketing skills and network to put Nirodh at sale points right upto villages.

Changing pattern of acceptors

There has been an increase of contraceptive use every year and the number of acceptors in the programme has risen from approximately 1.9 million in 1965-66 to 4.9 million in 1971-72. The totals however mask the fact that there is a change in the pattern of acceptance of the available methods. Whereas the number of acceptors of sterilization and IUCD have decreased the acceptors of Nirodh have continued to increase and pushed up the totals. Table 2 shows this fact.

The implications of the changing mix of acceptors need some elaboration. Several sample studies have been done on the characteristics of acceptors of different methods. These show that the acceptors of sterilization are in the older age group, of higher parity and predominantly rural. The sterilization

TABLE 2

Annual Acceptors by Methods (in million)

Year	Sterilization	IUCD	Conventional Contraceptives	Total
1965-66	0.54	0.81	0.58	1.93
1966-67	0.89	0.91	0.46	2.26
1967-68	1.84	0.67	0.48	2.99
1968-69	1.66	0.48	0.96	3.10
1969-70	1.42	0.46	1.52	3.40
1970-71	1.32	0.47	1.95	3.74
1971-72	2.16	0.48	2.23	4.87

may be in the male or female but calculating the age of the wife at the time it is performed, it comes to the average of about 36 years. In the case of IUCD the average age of the woman is 31 years. Nirodh on the other hand is yet not very acceptable in rural communities and is more popular with the younger and educated urban couples. The trend as shown in the acceptor pattern indicates that the impact of the programme is somewhat static in rural areas but is drawing more response in urban communities.

Another implication follows from the birth prevention value of each method and subsequent demographic impact. A change in the mix of methods changes the value of birth prevented by the programme.

The Department of Family Planning uses the following relationship for purposes of converting acceptors to birth prevention by taking into account the age of acceptors and their attrition:

1 Sterilization - 2.47 birth prevention over the life

1 IUCD - 0.98 birth prevention over the life

1 Conventional contraceptive couple year of protection - 0.15 birth preventions

(Distribution of 72 Nirodhs or 2 diaphragms or 7 Jelly/cream tubes or 72 foam tablets counts as one couple-year protection).

On the basis of the above but counting the birth prevention of sterilization and IUCD as a block value, Table 3 gives the potential demographic impact of each year's performance. The optimism derived from the fact that the programme is attracting an increasing number of acceptors must be sobered as an analysis reveals that in terms of demographic objectives the birth prevention value of the output shows a declining trend. From a peak birth prevention value of 5.27 million 1967-68 the yield for 1970-71 work declined to 4.01 million. But recent vasectomy camps have again increased the demographic effectiveness of the programme and the prevention value in 1971-72 has risen to 6.14.

The target couples (wife in age group 15-44 years) in India are estimated at about 100 million. The statistical data issued by the Department of Family

TABLE 3

Total number of births prevented eventually by acceptors of various years of the programme and total acceptors by year (in million).

Year	Sterilization	IUCD	Conventional Contraceptives	Total	Acceptors of all methods Totals
1965-66	1.33	0.80	0.09	2.22	1.93
1966-67	2.19	0.89	0.07	3.15	2.26
1967-68	4.54	0.66	0.07	5.27	2.99
1968-69	4.11	0.47	0.14	4.72	3.10
1969-70	3.51	0.46	0.23	4.19	3.40
1970-71	3.26	0.46	0.29	4.01	3.74
1971-72	5.33	0.47	0.34	6.14	4.87

Planning show that 13.2 per cent of these were protected by end of 1971-72: 9.3 per cent by sterilization, 1.6 per cent by IUCD and 2.3 per cent by conventional contraceptives. The acceptors are very unevenly distributed and the States like Uttar Pradesh and Bihar which have the highest concentration of couples are amongst the lowest in percentage of protected couples.

The Department has stated that by 1978-79 it aims to bring down the birth rate to 25 per thousand which in operational terms means to convert over 50 per cent of the target couples as contraceptive users. From the evidence of current trends this seems to be a difficult proposition. The current rate of acceptors in different States is 6.0 to 23.7 per cent, the more populous States being in the low category. It means a big effort by the low performance States to catch up and reach the stipulated goals. If they do not do so the less populous but good performer States will have to compensate by securing much higher than 50 per cent acceptors.

Prospects and needs in the Seventies

The future prospects and needs must be considered in relation to decision-action generated at the afore-mentioned three "power" structures: the target population, the policy administration group and the services.

The most critical factor is the individual couple, the final arbiter, who accept or reject contraceptive use and choose the offered methods. The program policies and services in consequence must be geared to take cognisance of the consumer factor. A number of surveys on the characteristics of acceptors show the significance of intermediate variables like education, economic levels, employment situation, urbanisation, etc. But little work has been done to find out the reasons for non-acceptance and the means to overcome them.

The analysis of about 26,000 cases in an all-India probability sample survey of couples with wives in age bracket 15-44 years concludes that in India about 18.3 per cent couples were ever-users, but current users were 13.8 per cent

which include 4.2 per cent users of methods like abstinence, withdrawal and rhythm. It means that about 82 per cent eligible couples have never used any method. This shows the magnitude of the undone work. The fact from the survey that more than 50 per cent of non-users approve of family planning gives the immediate potential in the target group.

About 7 per cent of the budget is utilized on mass education. All available media are used to carry information and messages to the population. Very little evaluation has been done on the relative merits of different media use. However, awareness is now well spread but the large gap between awareness and adoption continues to exist. It is contended that repetitive use of slogans like "Stop at 2 or 3 children" and high sale promotion of terminal methods have created an image of family planning as a programme that is mainly one of fertility limitation with terminal methods. It should have a deeper impact and spread over all parity cohorts if contraceptive use was promoted instead as a measure for fertility regulation. As the benefits of fertility regulation are experienced the credibility of family planning would be established and limitation should be more easily acceptable.

It must be noted that the contraceptive services offered are not being accepted by eligible couples and the output per service units in many instances is very small. So demand creation continues as the critical problem, not easily resolved. It is essential that the best skills in behavioural sciences are mobilized to find solutions. Specific groups would require selective approaches and motivational techniques. There is also now a greater need for group and interpersonal communication well co-ordinated with use of mass media.

Some advocate the notion that one way of achieving higher output is by rapidly adding more inputs, i.e., more service outlets, more personnel, more buildings, more vehicles. All this would steeply raise expenditure. For the Fifth Plan, the Department has the objectives of adding about 100 rural centres, over 7,000 sub-centres, constructing several thousand buildings and increasing mobility by providing 2,000 vehicles for primary health centres. With the increase in inputs and expenditure there was not a proportionate rise in number of acceptors. This needs some explanation.

The plans as made in 1965-66 envisaged that to give family planning greater relevance and effectiveness it should function through extended health services. So by implication the first need was to build up the health infrastructure. The status of the infrastructure varied from State to State. In some it was rudimentary and there were initial difficulties in the expansion process. These were gradually overcome but the tempo of expansion has been uneven. The investment picture can be gauged from the fact that in 1968-69 the cost of operating urban and rural family planning centres and cost of new buildings were 42-43 per cent and 5 per cent of the total expenditure for that year. For the same items in 1970-71 it was 37-38 per cent and 29 per cent. Thus, for these two basic infrastructure components the expenditure rose from 47-48 per cent in 1968-69 to 66-67 per cent in 1970-71.

The expanded infrastructure provides multi-dimensional services for maternal and child health care, besides those for family planning; it is reasonable that

a part of new expenditure should proportionately be marked as an investment in health activities. Besides, buildings, vehicles and other costly inputs do not automatically draw in more acceptors. These items are means of improving working conditions and efficiency and may in due course have an indirect impact and cause an increase in family planning acceptance.

It is not out of place to mention some other factors though it is difficult to evaluate their importance. In 1966 the Department was seized with a sense of urgency and took up several measures which were vigorously pursued. The Department received powerful support at the highest political level which began to decline from 1968 onwards. In later years frequent changes have occurred at senior and middle management both at the Centre and in the States. At the same time the programme has settled down to bureaucratic procedures which are normal to government functions.

The programme needs a new sense of purpose. With centralised planning and financing, the States tend to consider the programme primarily of concern to the Centre and tend to place it somewhat low in their own list of priorities. Maybe the situation could be improved if the Centre confined itself to broad strategic planning and imposed the functions of tactical planning on the States. The States would then face their individual problems, create a linkage between local needs and local resources and explore alternative approaches and delivery systems to propagate family planning. There are already examples of specific initiative taken in the States which have led to useful results. One State has tried a limited experiment of "Community Incentive" given to villages in which a certain percentage of population has accepted sterilization. Last year some States tested out a different methodology of holding vasectomy camps and variations of "incentives" to acceptors. The United Planters Association of South India has a pilot project of "no-birth" bonus for female employees in some tea estates.

In 1967, the Centre decided to give 100 per cent subsidy to the States to meet the cost of the program as it was found that the States were reluctant to invest even 3-5 per cent share from their budgets. It would be difficult to upset the financial *status quo* but perhaps in the future an element could be added of giving the States a special bonus on the basis of performance.

There is great scope to improve the programme administration. Modern techniques and tools should be introduced at all management levels and key personnel trained in their use. There should be a more effective communication between the three power structures, i.e., policy makers, services and target population. The premier importance of the consumer should be recognized and policies and work should be oriented to that end. The Nirodh Marketing project has demonstrated how marketing techniques can appreciably raise contraceptive acceptance though it must be added that the project has not been allowed the full use of marketing practices. A similar consumer-oriented approach will greatly enhance the output of the programme.

Recently the Department has authorised the creation of a new cell of Programme Analysis Research and Intelligence (PARI) and on similar lines Demographic and Evaluation (D & E) Cells at State Bureaus. These are not yet fully developed but should be quickly commissioned. The art of evaluation and assess-

ment is a new idea which has not yet found an important place in government functions. However, these cells have an important role to play. There is urgent need of a close look at costs and performance. Some preliminary studies show a wide range of expenditure on the programme. In 1969-70 the expenditure per 1000 population in the State ranged from Rs. 253 to Rs. 1080, a ratio higher than 1:4. The high spending States are not necessarily high in performance. When the analysis of expenditure on specific items is done the correlation between high spending and performance gets even less marked. More detailed cost-effectiveness studies are required to show sub-programmes of high cost and low productivity, of under-used capacity and of redundancy.

It is necessary to examine the services and the way they perform their functions. There have been very few studies on consumer reaction to service outlets which provide family planning. Various States have instituted variations in staffing patterns from what has been proposed by the Centre which should be evaluated. The camp approach also has implication for the infrastructure and staff needs.

The states last year used different mechanisms in organizing camps. For example, aftercare of vasectomy case was usually left to the field infrastructure but in one district of Tamil Nadu the operated cases were kept in the camp for 7 days during which they were provided with general medical care, nutrition and entertainment; perhaps a very welcome interlude for acceptors from the lower strata. Useful lessons can be derived from the experience of these camps. What were the causes of failure at some places? Was it low administrative efficiency, poor technical skills or lack of community support and approval? How critical is the incentive factor? One State Family Planning Officer has stated that "incentives help in minimizing the big gap between theory and practice of family planning by accelerating the process of decision-making". This leads to the question about what should be the quantum of the incentive and its form: cash or in kind or bonds that are encashable at a future date? Would it be necessary to raise its value in succeeding years? There are other issues also which call for attention. How to prevent or minimize non-eligible men who may be tempted by the incentive from undergoing vasectomy. It has been reported that in some places their number was more than 50 per cent of the operated cases. Another problem is how to maintain a certain tempo of work in between the camps wherein intensive effort is expanded.

The training of workers is an area which merits critical review. Though the Indian programme gives training a high priority in practice it is not so. The administrators do not appreciate the value of training as a tool for programme development. The training centres are mostly ill-developed and their capacity is not fully utilised. The training itself needs drastic revision. It tends to concentrate on theory and lacks elements to develop such skills which are particularly useful for field work. It also happens that often workers are not allowed to function in accordance with what they learn during their training.

An important event occurred in 1971 when the Indian Parliament approved a bill on "Medical Termination of Pregnancy" which liberalised the indications for performance of legal abortions. Women can now ask for and openly obtain relief from pregnancies that may have occurred from contraceptive failure or

are improvident and unwanted. This is bound to have an influence on family planning and opens up new opportunities to advance its promotion.

Conclusions

The Indian Family Planning Programme has a complex and diversified structure. It has a variety of experiences which merit research and study. These will provide valuable lessons for improving various programme activities as well as useful guidelines for others. Evaluation and assessment are new but difficult functions, not readily accepted in government departments but essential tools for effective management. The most critical factor in a family planning programme is the consumer. It is vital to undertake a series of social researches in consumer behaviour and attitudes and find out methods of demand creation. The programme policies and services must have their focus on the consumer.

Amongst the important components of the programme are the status of health infrastructure and administration. In States and districts in India where the health network is reasonably developed and leadership is dynamic and assumed at a level that can call on many other resources, the performance has been good. It must however be understood that bureaucratic health services have limitations. In developing countries these are not spread enough to cover all sections of the population particularly in rural areas. The Indian experience with the Nirodh Marketing Scheme demonstrates how commercial organizations can play a role and add to the avenues for delivery of contraceptive technology. There are other institutions such as professional groups, trade unions, workers' clubs, voluntary social service organisations, who have not been actively mobilised but have a great potential in advancing the family planning movement.

THE IRAN FAMILY PLANNING PROGRAMME*

by

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Traditional methods of contraception, including *coitus interruptus* and folk drugs and devices, have been known and practised in Iran from the earliest times. Current research and clinical experience suggest the extensive use of *coitus interruptus*. The condom appears to be the second most common non-clinical method. Oral contraceptives and IUDs were introduced in the early 1960s, but the latter device has never gained the popularity of the pill. The ratio of new pill to IUD acceptors is about 20:1. Possible reasons for this large difference may include (a) the reluctance of rural women to accept a pelvic examination by a male physician and (b) concern over the more obvious side effects of the IUD. Condoms, chemical methods and diaphragms have never been strongly promoted, presumably because of their low use-effectiveness.

As in many countries, induced abortion has been practised in Iran since ancient times. However, abortion is currently illegal in Iran except in cases where the life of the mother is in danger. Despite this, there is some evidence that the actual rate of induced abortion amounts to about 15 per cent of the total number of pregnancies. A survey of IUD acceptors in larger cities revealed that 23 per cent of the women admitted to one or more induced abortions, and the actual figure may be higher. Prosecution for illegally induced abortion is extremely uncommon, and the Government is giving its close attention to future policy in this important area.

Sterilization is also illegal in Iran but remains a matter between doctor and patient. Views on sterilization as a family planning method differ widely, as do the formalities preceding the operation. Some form of written consent by wife and husband, with other undertakings designed to protect the operating physician, is usually drawn up. Most sterilizations have been in the form of tubal ligations rather than vasectomies, although the total number of either operation is insignificant from the demographic point of view.

Population policies

The Government's interest in family planning dates from 1960, when His Imperial Majesty, the Shahanshah, and his Government were beginning to be concerned about the rate of population increase following demographic studies based on the 1956 census, which showed a rapid rate of birth. The report of a population committee was included in studies preceding the third five-year development plan, in 1963. In 1966, the Government appointed an Under-Secretary for Family Planning in the Ministry of Health, and a few months later a specific plan

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with budgetary estimates was submitted to the Government. This programme, which aimed to use the maximum number of medical personnel in Iran for part-time family planning services, got under way in April 1967.

The objective of the family planning programme in Iran is to promote the physical, mental, social and economic welfare of families and, in consequence, that of society. In view of the serious impact of the current rapid population growth on the country's over-all development, the Government adopted a more aggressive population policy in May 1970. The ultimate goal was set at an annual population increase of 1 per cent, to be achieved within twenty years. The Ministry of Health was called upon to design a new national programme, to ensure the co-ordinated involvement of all relevant government, non-government and voluntary agencies. The national tradition of numerous agencies providing medical and related social services, including family planning, makes this co-ordination function both important and difficult. The programme is to emphasize flexibility and experimentation. The Ministry of Health is responsible for planning, organizing and carrying out the family planning programme. The major service aspects of the programme are closely linked to the country's health and medical service system, especially MCH services. Basically, MCH clinics are used as service points for contraceptive methods and the staff is being trained in the management of clinical contraception. The over-all objective is offer contraceptive services wherever clinical facilities are supported by the Ministry of Health, other ministries and non-governmental and private organizations. These services, which are being introduced into hospitals providing maternity care, are being ensured by various agencies governmental and non-governmental.

Support and opposition

Strong and constant support for the family planning programme has come from His Imperial Majesty, the Shahanshah. In 1967 he joined 29 other world leaders in signing a Declaration on Population, which was presented to the United Nations Secretary-General. He has since spoken publicly, on a number of occasions, of the need to limit Iran's population growth. There has also been general support among the authorities and opinion leaders.

In terms of acceptance of family planning by the majority of the population, there is good reason to believe that motivation and demand are already present to a considerable degree, especially in the more developed areas. Indeed, it is clear from clinic cards that only about 10 per cent of contraceptive acceptors want any more children at all. But this does not mean that education and motivation are unimportant. The education and motivation of low-parity women, of those immersed in traditional attitudes, and of males, remain a large and arduous undertaking.

Opposition to family limitation has been negligible, coming mainly from those who still believe that Iran has ample room for population expansion, or from those unaware of the rapidly falling infant mortality rate. But family planning has never been a controversial issue. Since 1966, when the national census confirmed the rapid rate of population growth, and demographers and economists pointed out the consequences for the society of unchecked growth, there has been a growing awareness of the need for family planning.

A study conducted in Tehran in 1971 indicated that the majority of married women interviewed (63 per cent) felt that birth control and family planning were acceptable practices within the Islamic faith. Religious leaders in Iran generally accept family planning and the use of contraceptives. On the other hand, statements by authoritative Iranian religious leaders have specifically opposed sterilization or the use of any form of contraceptive which would result in abortion, even at the very beginning of conception. Statement from religious leaders in other Islamic countries also prohibit abortion, but only after the "quickening" of the embryo.

Population programme activity

Objectives

The programme is striving to achieve the psychological, social, economic and physiological welfare of families through advising and assisting the public to control family size, that is, to help couples to strike a balance between the number of children in a family and its socio-economic circumstances. Within this general objective, the programme seeks to achieve the following aims: to reduce induced abortions, especially those without professional supervision; to correlate the rate of population increase with *per capita* income; to balance the age structure of the population; to increase the economically active population of the country; and to facilitate a reduction in the present population growth rate to a level commensurate with natural resources and socio-economic goals. In order to accomplish these objectives, the Ministry of Health is: providing training to both medical and opinion-leaders' groups; informing the general public; establishing family planning activities in clinics throughout the country; conducting, supervising and encouraging research in demographic, medical and social science areas; extending contraceptive information and services to rural areas; providing supplies and technical advice; and arranging for international assistance wherever required.

Operational policy

The fact that the programme is being implemented through existing health and clinical facilities means that the introduction of family planning functions calls for the use of existing technical staff on a part-time basis and of additional staff for motivation, home visits, supervision and record-keeping. Follow-up of new acceptors, regular home visits, and more convenient access to supplies and services are features gradually being added to the programme and are expected to improve acceptance and continuation rates. Preventive health care, including family planning, is provided free of charge. On the matter of incentives, the current policy of self-motivated and voluntary acceptance of family planning is expected to continue. Thus, the provision of incentives to field staff or to local functionaries for references and contraceptive distribution, or of subsidies to private physicians for IUD insertions, is not currently practised except on an experimental basis.

One important function of the Ministry of Health is to set standards and to secure an even national distribution of resources and services. The rapid develop-

ment and the complexity of the national effort makes imperative the need to achieve common basic patterns as to categories and numbers of staff, equipment and drugs, management of contraceptive services, follow-up, records management, field worker productivity and so on.

Family planning organization

The Government has given the Ministry of Health authority to plan, co-ordinate, organize and implement the family planning programme. These functions have been delegated to a special division in the Ministry, headed by an Under-secretary of State for Health and Family Planning. The Family Planning Division works closely with other sectors of the Ministry of Health to ensure co-ordination, and to obtain technical assistance in areas such as health education. One result of this co-ordinated approach has been the strengthening of the Division's capacity through the transfer to it of the Ministry's MCH unit and the entire Women's Health Corps.

Other ministries involved

The Ministry of Education, in co-operation with the Ministry of Health, has introduced population education material into the biology and social studies curricula of the junior high and high school. Material has also been prepared for primary schools dealing with the elements of reproduction and the family. At the university level, the non-medical faculties now include in their syllabi a wide range of social science and biomedical subjects directly related to reproduction and family planning. The Ministries of Labour, Housing and Development, Agriculture, and Land Reform also include short courses on family planning in general training programmes and encourage their field staff to disseminate information on family planning. The Ministry of Labour, through the Workers' Insurance Scheme, is charged with providing health and medical services to wage-earners, usually industrial workers, and their dependents.

Other components of the Government provide health and medical care for specific groups. These include the armed forces, the gendarmerie and the police forces, which provide health services for their personnel and families. The National Iranian Oil Company (NIOC) and its associate subsidiaries have an extensive programme and network of health and medical care facilities for employees and their families.

Co-ordinating bodies

The principal co-ordinating body at the centre for the major organizations engaged in activities related to family planning is the High Council for Co-ordination of Family Planning. The Council meets under the chairmanship of the Under-Secretary of State for Health and Family Planning. The following governmental and non-governmental agencies are represented on the Council: Armed Forces Health Services, Gendarmerie Health Services, Police Force Health Services, Red Lion and Sun Society, NIOC Health Services, Imperial Organization for Social Services, Institute for the Protection of Mothers and Children, Family Planning Association of Iran, Ministry of Labour Insurance Organization, Ministry of Land Reform, Rural Insurance Organization and the National Women's Organization.

Programme operation - the delivery of services

The major problem of family planning in Iran is to reach not only the country's urban population, but also its 50,000 villages, many of which are in remote areas. To meet the demand a total of 1,780 clinics were operating by mid-1972. To expand clinical services in rural areas, 37 mobile family planning clinics were made operational in 1971. These mobile teams, together with Health Corps units, operate as extensions of the stationary clinics for health and family planning. The expanding education motivation and extension services of the programme are expected to result in increasing numbers of health and family planning clients in the rural areas.

Training

It is manifest that the implementation of the national family planning effort relies on an adequate continuing supply of trained personnel: medical (doctors and nurses); administrative and supervisory; functional specialists (information, motivation, education, and technical); paramedical (nurses' assistants, assistant midwives, and rural midwives); and field staff (home visitors, motivators and public educators).

Currently, the Family Planning Division is operating a number of training centres in different parts of the country to perform this function. The oldest and largest of these is the Firouzgar Centre in Tehran. In addition to short orientation courses in the provinces, the Firouzgar Centre offers various intensive family planning training courses for many of the medical, paramedical, and field personnel who will be performing family planning functions within the governmental or non-governmental context.

In addition, large numbers of personnel from other governmental and non-governmental agencies - plus a limited number of private practitioners - have received training.

A partial list of the groups trained are:

- Literacy Corps
- Extension and Development Corps
- Home economics agents
- Rural co-operative supervisors
- Women's Association members

Communications, mass media and public education

The two major tasks of the national family planning programme are to deliver information and services to Iran's population. To carry out the first of these, the Family Planning Division established a unit for motivation and communications as part of its technical affairs section. At present the Division's communications activities consist mainly in producing public displays, such as graphs and calendars, preparing and showing family planning films, producing and distributing leaflets and pamphlets, and publishing family planning bulletins in both Farsi (monthly) and English (quarterly) with a total circulation of over 50,000. Radio and television are the newest and potentially most useful media in the programme,

which still basically relies on face-to-face methods of contact and communications and the Division is beginning to make greater use of these. Several films and film strips have been produced for television and cinema. The Division is in the process of setting up its own printing facility, which will enable it to produce large quantities of leaflets and posters for different audiences and purposes.

The Division is also developing its own staff of education and communications officers to work in the field. A network of mobile education and communications units, each manned by a health or family planning education officer, an assistant and a driver, is being developed to operate out of smaller cities. These units will serve these small areas and, where possible, will reach out into rural areas. Their task is to promote, arrange and co-ordinate communications activities for adult education and social welfare through all existing channels.

Population education.

Iran recognized the need for developing such a programme at an early point in its own population effort, when the Ministries of Health and Education initiated an ambitious programme of public school curriculum and textbook revision for population education. Today most textbooks in Iran's junior and senior high schools contain material on population education. The Family Planning Division followed up the initiation of curriculum and textbook change with a programme designed to introduce and explain the subject of population to the country's public school teachers. During the summer and autumn of 1971 the Division held a large number of seminars throughout the country to bring this new educational effort to the teachers who would, in effect, implement it. Over 21,000 teachers attended these one-day seminars.

Budget and programme costs

The amount originally allocated to family planning by the Plan Organization was 500 million rials (\$US 6.7 million) for the fourth five-year development plan (1968-1973). A review of the dimensions of Iran's potential population problem, led to a review of the population policy by the High Plan Council in 1970, and to a more aggressive programmatic effort. The budget allocation for the fourth plan was quadrupled to 1,500 million rials, the remaining amount to be spent over the three final years of the plan.

Programme evaluation

An evaluation unit was formally established in the Family Planning Division late in 1970. Following a request to the United Nations an expert on demography was assigned to the unit to help improve the service statistics, KAP survey, and evaluation system of the programme. To improve the evaluation system further, a one-month ECAFE-sponsored evaluation workshop was held in Tehran during November-December 1971 for 30 field staff. At the conclusion of the workshop the staff members returned to their respective provinces to lay down the basis of a more rigorous and efficient national family planning evaluation system. The key-punch and tabulating equipment being provided by the Population Council (United States) will permit prompt computerization and analysis of national service statistics. The Population Council also provided during 1971 the

short-term services of an evaluation expert to work with local staff on the design of the augmented statistics and evaluation system.

Research

Biomedical. Although some research is being carried out in this area, mainly in the country's universities, the Government intends to develop or strengthen research on the biomedical, clinical and epidemiological aspects of human reproduction. With this in mind, it is considering a central, multidisciplinary institute for research in human reproduction and population dynamics, and for post-graduate research training. It is anticipated that such an institute would help guide the planning and implementation of the family planning programme. The Government is also considering ways to develop and encourage research in the nation's universities and other educational institutions through the development of a grant allocation system.

Demographic. Although the country has developed some capacity for research, censuses, and statistical evaluation, there is much to be done to strengthen and expand these efforts. This will be done through a more carefully designed and more frequent census, a streamlined annual demographic survey, improved registration and special studies.

Knowledge, attitude and practice. A surprising number of KAP studies have been conducted in Iran, beginning in 1965. The latest of these was sponsored by UNESCO in August 1971. A special KAP study on Iran's private physicians has been completed by the Family Planning Division and will be released shortly. It is expected to provide a wealth of interesting data. A large-scale national KAP study is currently being planned by the Division staff. Other special KAP-type studies are planned, e.g., of teachers, paramedical personnel and industrial workers.

Foreign assistance

In mid-1970 the Government of Iran requested the UNDP office in Tehran to initiate a procedure whereby all external inputs into the national family planning effort would be co-ordinated by the office of the UNDP resident representative. The purpose of this arrangement is to maximize the effort of outside support by reducing duplication among donor activities. The procedure is also expected to reveal programme areas in need of support in the evolution of the comprehensive programme. An initial donors' meeting was held in New York in 1970, followed by meetings in Tehran. A more comprehensive meeting was held in November 1971 to brief donors and prospective donors on the current status and plans of the government programmes and to identify areas requiring additional support.

United Nations

In 1969 UNDP appointed a Population Programme Officer, resident in Tehran, to serve the Turkey-Iran-Afghanistan region. Following the initial donors' conference described above, the United Nations carried out in early 1971 a comprehensive review of the Iranian programme through a United Nations / WHO

/UNESCO team led by Lord Caradon. Following the submission of this interagency report in mid-1971, the Government prepared a series of project requests which were directed to UNFPA and other donor groups. The UNFPA indicated its intention to support a number of these projects and the details of their implementation of this large grant agreement are UNICEF, UNESCO, WHO and others. In order to carry out the projects, UNFPA is providing a grant of \$US 1.66 million to be utilized during the 17-month period between the finalizing of the agreement and the beginning of the fifth five-year development plan in 1973.

During November 1971, IBRD sponsored a thorough inventory of all organizations in Iran currently active or interested in family planning. The study was intended to assist the Government in gaining an over-all view of current activities and organizational resources, to guide the nature and scope of United Nations population activities in Iran, and to perform the Bank's normal pre-investment function as it prepares to consider a loan to Iran for family planning purposes.

Plans for the future

The over-all goal of the family planning programme over the next five years (that is, by the end of the fifth five-year plan in 1978) is to reduce the present fertility rates of 48 births per thousand to 40 per thousand. In order to accomplish this, the programme will have to provide contraceptive services to 3.6 million women and avert approximately 1 million births. Assuming that each woman will visit an MCH/family planning clinic nine times per year, there will be 32.5 million clinic visits during the period. In order to meet this demand, the Family Planning Division plans to strengthen or expand programme components as follows:

Training. To continue to expand training of medical and paramedical personnel. Twenty-three additional provincial training centres will be needed to meet the target of 400,000 trainees during the fifth plan.

Information and education. To step up these media-based and educational activities, with the ultimate goal of making the entire population aware of population and family planning.

Clinic services. To establish a network of clinics to serve a rural population of 18 million with a target ratio of one clinic per 10,000 population (i.e., 1,800 clinics). For the urban population of 13 million, 650 clinics will be needed to meet the target ratio of one per 20,000 population. As there are already more than 1,600 clinics in operation, it will be necessary to open an additional 850 clinics during the fifth plan in order to meet these targets. In addition to these numbers, part-time clinics will begin to operate on a full-time basis.

Other areas to be strengthened or expanded include: Research and programme evaluation; the study of population affairs, to establish a socio-economic basis for policy decision-making; and the Women's Health Corps, to increase output of trained personnel to 1,000 per annum.

THE REPUBLIC OF KOREA'S EFFORTS, ACHIEVEMENTS AND PROBLEMS IN FAMILY PLANNING*

by

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The Republic of Korea faced the 1960s with 2 million refugees from northern Korea at the close of the Korean War in 1953 and a post-war "baby-boom." The 25 million population in 1960 increased by 3 per cent per year. The Republic of Korea's total land area is 34,427 sq mi, but only one-fifth of it is arable. This meant that every square mile of cultivated land had to support 3,200 persons in 1960.

The people's expectation for higher levels of nutrition, health, education and shelter continued unabated at the same time that the Government, with *per capita* GNP at \$US 94, had to struggle for national economic development and defence against future invasion.

Table 1. Basic population data

Year	1960	1970
Estimated population	25,000,000	32,000,000
Density per square kilometer	254	325
Urban population: Rural population	28:72	40:60
Non-farm population: Farm population	43:57	54:46
Density per square kilometer of arable land	1,350	1,520
Estimated births per 1,000 population	42	29
Estimated deaths per 1,000 population	12	9
Rate of natural increase (percentage)	3.0	2.0
GNP per capita (US\$)	94	223

EFFORTS

Voluntary Organization

In 1961, civic leaders of the Republic of Korea interested in the promotion of the people's health and welfare and national development founded a voluntary organization called the Planned Parenthood Federation of Korea (PPFK) as a national family planning movement. The group fully recognized the problems of rapid population growth and the future responsibility of the Government, with a strong faith that its ultimate goal was the health, happiness and well-

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being of the individual family. Therefore, the policy they proposed was to enlighten and educate the people for family planning and not to force it on them.

After the organization of PPFK was completed in 1961, family planning activities started. PPFK was greatly encouraged when the Government decided to adopt a policy in favour of family planning by autumn 1961. During the initial years (late 1961 to late 1963) when a section in the Ministry of Health and Social Affairs was organized to implement the policy, PPFK was delegated such activities as detailed programme planning in the recruitment of workers, selection of contraceptive methods, setting of targets, training of workers, and information and education. During this period, in disseminating the family planning idea, PPFK took advantage of the Government sponsored nation-wide enlightenment campaign carried out by the National Reconstruction Movement.

The voluntary agency has continued to perform requested service functions for the national programme being carried out by the Government. Such activities are (1) training of workers, (2) mass media, (3) organization of village clubs, (4) manufacture of IUDs, (5) printing of education materials, (6) operation of mobile vans, (7) testing of new ideas through pilot projects, and (8) management of donor agency grants.

Since 1971, when the responsibility of training family planning personnel and evaluation was transferred to the newly established semi-governmental organization, the Korean Institute of Family Planning, PPFK's major role has been in information and education and in pilot demonstration projects.

In 1971, PPFK and the Government changed the ten-year old slogan "3335" (three children with three years spacing before the mother's age is 35). The present slogan is "Daughter or boy without distinction, stop at two, and provide good care" with the intention of reducing the ideal family size norm to two children from the currently popular idea of "two boys and one daughter" which ultimately leads to four or more children on the average.

National family planning programme

1. Objectives: Limiting population increase through the family planning programme is an integral part of the Republic of Korea's economic development plan. The objective of the family planning programmes, according to the ten-year plan formulated by the Ministry of Health and Social Affairs, is to reduce the natural increase rate of 3.0 per cent in 1961 to 2.5, 2.0 and 1.5 per cent by the end of 1966, 1971, and 1976 respectively.

2. Organization: The Government announced a population policy in late 1961, giving the primary administrative responsibility for implementation to the Ministry of Health and Social Affairs. Budgets and programme activities began in 1962. Family planning was administratively strengthened in 1963 by the formation of a Maternal and Child Health Section (MCH) in the Ministry charged with planning and supervision. In 1972 a Bureau of MCH was organized with three sections; MCH, Nutrition, and Family Planning, giving more strength to the central administration of this national effort. A chart of the present organization is given in the figure.

The national family planning programme operates through the Family Planning Section of the Bureau of MCH, one of six bureaux in the Ministry of Health and Social Affairs. The chief of the Family Planning Section handles the day-to-day management of the programme in close consultation with the Bureau Director. These officials carry direct responsibility for policy, budgets and targets, supplies, records, and relations with the provinces. The Ministry of Health and Social Affairs works with the Ministry of Home Affairs, which oversees provincial and local governments. This Ministry acts through the nine provincial governments and two special city governments, all of which have Family Planning Subsections in their Bureaux of Public Health and Social Affairs. All targets for acceptors of contraceptive methods given to the provinces are passed on to the counties, then to the townships, and finally to the field-workers.

The actual services have been implemented through the already existing national and provincial health service network, which consists of 191 health centres, located one per county (139) in rural areas and one per city ward (52) in urban areas. From the beginning, this organization provided an automatic network for routine administration, a channel for reporting, and a definite chain of command from the national to the local level. This enabled the programme to get off to a quick start and avoided the necessity of constructing a large, new organization.

3. **Activities or projects:** In order to achieve the initial ten-year goal by 1971, it was estimated that 45 per cent of the married couples of child-bearing age must actively practise family planning, 35 per cent through the government programme and 10 per cent through their own resources. It was estimated that less than 5 per cent of eligible couples were practising family limitation prior to 1961.

Implementation of the programme is dependent on 2,370 full-time family planning workers dispersed throughout the country (one worker per 1,250 eligible couples in rural areas and one per 3,000 or more in the cities). Annual targets for IUD, oral pills, vasectomy, and condom-users are allocated to each area mostly in accordance with the population. Workers recruit eligible couples to accept one of the methods offered by the programme through door-to-door visits and group meetings. In 1968, in order to assist the workers, PPFK organized 17,000 mothers' clubs in 16,868 administrative villages throughout the country. Extensive information and education services are provided by PPFK through printed matter, the radio and television and with the collaboration of related agencies.

The field-workers themselves distribute condoms and oral pills and refer IUD and vasectomy acceptors to private physicians trained by PPFK and authorized by the Government (1,000 doctors for IUD, 600 doctors for vasectomy). These physicians provide services at their own facilities and are reimbursed through the programme on a per case basis. These services, except for oral pills (8 cents per cycle) are free to the acceptor, and each vasectomy acceptor received \$3.00 compensation for work time lost (from 1972 this incentive to vasectomy acceptors was discontinued). Acceptors experiencing medical complications as a result of one of the methods can obtain treatment free.

Contraceptive methods offered by the programme on "cafeteria choice"

were form tablets, condoms, jelly and rhythm methods till 1964, when the IUD was introduced as the primary method after a one-year clinical trial. In 1967, oral pills were provided for those who could not tolerate IUD, but in 1969 they were offered to all women. A male sterilization programme was added in late 1963. In the order of preference, the IUD, oral pill, condom and vasectomy are currently the leading methods accepted.

Although illegal, abortions are performed by numerous physicians with very little interference from the Government. A 1967 KAP survey showed that 25 per cent of urban women and 7 per cent of rural women had experienced at least one induced abortion. A 1971 fertility survey showed the experience rate at 34 per cent in urban areas and 17 per cent in rural areas, a sharp rise among rural and urban women over the 1967 figures.

In 1964, the first KAP study was conducted by a joint effort of Yonsei University and PPFK. They were succeeded by the Family Planning Evaluation Unit of the Ministry of Health and Social Affairs during the following year. Numerous studies and surveys have also been conducted at universities and colleges. PPFK has been responsible for the support and arrangement of a clinical trial with any new contraceptive method before the Government's approval for its importation or production.

4. Budget and supplies: The financing of field activities has come from the budgets of the central and local government units in the form of: (a) supplies procured in the country, (b) field-workers' salaries, (c) medical services, and (d) supervisory and administrative costs. The total budget has been 3.5 billion won from the central Government and 1.3 billion won from the local governments. When converted into US dollars at the exchange rate for each year, the total comes to \$16.5 million or approximately 5 cents **per capita** per year over the ten-year period. This is a modest national investment which has produced such a real impact on the fertility rate, helping many families and making the nation better prepared for the future.

Foreign assistance has helped in research, training of personnel, information programmes, and commodities. In the early days of the programme, voluntary agencies such as IPPF and the Population Council provided support directly related to the programme or to research. Beginning with 1968, government agencies, particularly SIDA and USAID, started to assist the programme, mostly with commodities. SIDA has provided the oral pills used by the programme. The table below shows the amount of foreign donor contributions divided into three categories (million US dollars):

Direct programme support	4.1
Research and evaluation	2.4
Vehicles, equipment and buildings	4.0
Total	10.5

These data can be used to recalculate the cost of the programme, first by adding in only those portions of the donor contributions related to direct support of the programme. This gives an average **per capita** cost of 7 cents per year. For the total of all contributions, this average rises to 9 cents.

The cost per contraceptive of the programme has been rising slowly. Based on the central Government's contributions, these were about \$3.50 per contraceptive in 1970 and \$4.00 in 1971. If the direct programme aid from donors were included, the figures would be \$5.00 and \$5.65 respectively.

In addition to the contributions cited above, there has been a recent government donation from counterpart and other funds to an endowment for family planning totalling \$7.8 million. The interest from these funds is assisting the programme in many ways during 1972, reflecting a new and different pattern of programme funding. It is still too early to evaluate the effect of these resources on the programme. They are being used to support medical service fees, training, and some research.

It is hoped that UNFPA will soon assist the Republic of Korea's family planning activities with contributions to expand the present programme, to improve the field-work staff and to increase the information and education effort.

ACHIEVEMENTS

Target achievement

Table 2. Original target and results of the ten-year (1962-1971) family planning plan

Methods	Target	Achievement	Progress (percentages)
IUD insertion	1,800,000	2,184,929	121.4
Vasectomy	150,000	169,303	112.9
Supply of traditional contraceptives	150,000	161,000	107.5
Oral pill	320,000	199,274	62.3

Table 3. Revised targets and achievement of family planning

Year	IUD		Oral pill: Cycle			
	Target		Achievement		Target	
	Annual	Cumulative	Annual	Cumulative	Target	Achievement (Monthly average)
1962	—	—	—	—		
1963	—	—	1,493	1,493		
1964	100,000	100,000	106,397	107,890		
1965	200,000	300,000	225,951	333,841		
1966	350,000	650,000	391,687	725,528		
1967	350,000	1,000,000	323,452	1,048,980		
1968	300,000	1,300,000	263,132	1,312,112	171,000	26,300
1969	300,000	1,600,000	285,500	1,597,612	320,000	91,200
1970	300,000	1,900,000	295,100	1,892,712	320,000	170,500
1971	300,000	2,200,000	292,217	2,184,929	320,000	192,500

Vasectomy				Contraceptive supply: Condom user		
Target		Achievement		Target	Achievement	
Year	Annual	Cumulative	Annual	Cumulative	(Monthly average)	
1962	3,000	3,000	3,413	3,413	50,000	59,350
1963	20,000	23,000	19,866	23,279	100,000	129,800
1964	27,000	50,000	26,256	49,535	150,000	156,300
1965	20,000	70,000	12,855	62,390	150,000	191,700
1966	20,000	90,000	19,942	82,332	150,000	168,900
1967	20,000	110,000	19,677	102,009	150,000	152,700
1968	20,000	130,000	15,988	117,997	150,000	135,200
1969	20,000	150,000	15,457	133,454	150,000	147,800
1970	20,000	170,000	17,321	150,775	150,000	163,000
1971	20,000	190,000	18,528	169,303	150,000	161,000

Goal achievement

Information available in 1961 and in subsequent studies indicate that the growth rate of the Republic of Korea's population at that time was approximately 3 per cent a year. Present indicators from the 1970 census and other special surveys show a growth rate in the neighbourhood of 2 per cent. This is a remarkable decline over a ten-year period in the life of any nation. It would seem reasonable to conclude that family planning has made a very real contribution to this reduction, through its widespread motivation and services programme.

While the crude death rate was declining from about 12 deaths per thousand population to 9 over the last ten years, the birth rate was falling much more rapidly, from 42 births per thousand population in 1960 to about 29 in 1970. The readiness of the married couples of the nation to reduce their average family size by many means, including contraception, is seen as the reason for this remarkable decline.

In analysing the various factors related to the approximately 30 per cent reduction in the fertility rate, the following findings have been reported:

	Percentage
Age at marriage component	12
Family planning component	11
Abortion component	6
Total	29

Many factors have gone into the rising age of marriage, e.g., better educational opportunities and more employment for women and universal army service for men. The resulting considerable rise has had a strong impact on fertility rates:

	Age at marriage	
	1955	1968
Women	20.5	23.0
Men	24.6	26.8

Abortions have played a significant part in the fertility decline. It has been noted in studies that those who have accepted the IUD have a much lower subsequent fertility rate than those who never accept. Even though the continuation rates for the IUD in the Republic of Korea are poor, they seem to have been a means for many poorer-class women, especially those in the rural areas, to make a commitment to stop having any more children. When they become pregnant they resort to abortion. At present, the number of women who have had one or more abortions in urban and rural areas is 34 per cent and 17 per cent respectively with a nation-wide average of 24 per cent. This is an increase over earlier figures and shows a rising trend which will bring about an even higher impact on the fertility rate in the future. Although family planning cannot claim any direct part in this activity, its indirect impact cannot be denied. Preaching the message of the possibility of controlling one's own fertility produces all kinds of reactions, from the use of contraceptives to abortions.

PROBLEMS

Administration

1. Finance

The budget in the past, like that projected for the next few years, has been too small to provide sufficient contraceptive services to bring down the fertility levels to the government target. As has been pointed out, the role of rising age at marriage and of abortions has been important in lowering the fertility rates so far. Their future role, however, is most uncertain. The present number of couples using contraception, whether with their own funds or through the government programme, is only one-quarter of the eligible number. This rate of practice must be increased to over 40 per cent, since the postwar baby boom will increase the number of married women by 15 per cent within the next four years and the number will double within the next twenty years. Small increases in programme effort and contraceptive practice levels will merely allow the programme to maintain the present position of about 2 per cent annual growth rate. Any improvement in the present performance and any aim to meet the target of 1.5 per cent annual growth rate in four years must be supported by greatly increased funds for the main programme activities of getting more couples to practise contraception and at an earlier age.

The table gives the total family planning budget, by source, for 1961-1971.

Table, Total family planning budget by source, 1961-1971

Year	National budget (Million won)	Local government budget	Total (thousand US dollars)	Dollar US dollars)	Foreign equivalent	Total aid
1961	-	-	-	-	3	3
1962	42.7	-	42.7	237	38	275
1963	77.0	-	77.0	355	50	405
1964	158.2	58.3	216.5	849	249	1,094
1965	195.4	64.0	259.4	957	345	1,302
1966	423.1	129.4	552.5	2,009	309	2,318
1967	324.9	155.5	579.4	2,084	498	2,582
1968	430.0	147.7	577.7	2,049	2,261	4,310
1969	512.7	200.0	712.7	2,374	2,352	4,726
1970	561.4	291.0	852.4	2,749	1,721	4,470
1971	674.4	287.4	961.8	2,829	2,836	5,565
Total	3,498.8	1,333.3	4,832.1	16,492	10,558	27,050

In order to meet the auditing requirement of government bureaucracy, acceptors are requested to bring their "dojang" (signature chop) and identification card each time they get supplies and services. The field-workers have to carry "dojang" ink and have to spend time in issuing individual receipts for 8 cents per cycle of pills.

2. Organization and co-ordination

Family planning programmes operated alone by the Ministry of Health and Social Affairs will not be sufficient to solve the population problem. Other government agencies, such as the Ministries of Education, Information, Economic Planning, Justice, Agriculture and Defence, all have important activities they should carry out in population education, communication, legal systems, government policies, budget formulation, personnel and tax programmes, etc. Such participation requires the formation of a Population Council reporting to a high level authority of the Government, such as the President or the Prime Minister.

The present Family Planning Advisory Committee, chaired by the Vice-Minister for Health and Social Affairs, is at too low a level to develop the inter-ministerial wide-scale programme required to bring down the birth-rate to below 20 per cent. In view of the importance of family planning, the administration of its programme must be vested in at least a bureau-level governmental organization with well-qualified staff who possess good interpersonal relationships with other private agencies and/or offices of the Government. This problem was partially solved by the establishment of the Bureau (equivalent) of Maternal and Child Health; this has three sections: Family Planning, MCH, and Nutrition.

The programme has been related almost totally to health centres and doctors in private practice. The hospital network has been involved only sporadically.

Health Centre personnel are responsible primarily to their county chief administrator and only secondarily to the Provincial Health Department and Ministry of Health. This makes supervision of field activities difficult and leads to inadequate development of a systematic supervisory system.

Vital statistics in the Republic of Korea are very poor, making it difficult to evaluate the programme, plan adequate targets and locate acceptors in their early post partum period.

3. Health services

By and large, the health service in the Republic of Korea is poor. MCH services are still in their infancy stage. It is known that they are not so cheap or simple to develop as contraceptive services. Therefore, premature integration of family planning into MCH and other services is likely to weaken an already well-established family planning services, although the goal is ideal for long-term plans.

The target system, which emphasizes the initial acceptance of a method and quantity more than quality of service or continued contraceptive practice, has not emphasized sustained follow-up by field-workers. There is a need for more contact with women by field-workers, to lower the rate of discontinuation of contraceptive protection.

Professional workers

1. Personnel

The rate of attrition of trained field family planning workers is too high. By the end of two years more than two-thirds of trained field-workers have left their jobs. Although the vacancy rate of field-workers' positions is not too high (5.6 per cent as of 1 October 1970), almost 50 per cent of those currently on the job have less than one year's experience. Not only is the vacancy rate of family planning nurses at health-centre level very high (19.6 per cent on 1 October 1970), the replacement by unqualified women workers causes only 22.3 per cent of health centre family planning workers to become nurses. One reason is that the pay is too low, also there is little future in the job: hence the drain to the Federal Republic of Germany and other well-to-do countries continues.

The medical doctor who is the health centre director is no exception to the above-mentioned problems. There are very few well-qualified public health doctors in this position. Those who accept the position easily become discouraged because of the poor salary, little authority over their own staff personnel, and poor support from local authorities. Therefore, although there are exceptions, most health officers staying in the position long enough are generally poor in professional ability.

2. Lack of knowledge

Those responsible for the administration of family planning programmes of local governments (city, county, and province) are not experienced professional workers but male clerks assigned to the position by the local authority. They have some administrative experience in dealing with "red tape" but possess little knowledge of the programme. In practice, the family planning nurses and

women workers are under their control, most of whom are disappointed with their jobs and try to move to another field in government service. Therefore, training them yields little return unless some measure is taken to keep them longer in their positions.

3. Fee system

Medically-related contraceptive services have been provided on a fee basis, by over 1,000 private practitioners. This has been reasonably satisfactory in the towns and cities where doctors have been close at hand, but in rural areas it has often been necessary to train and use doctors with limited licences. These men have sometimes not been able to provide quality service and follow-up. In the city of Seoul, the employment of private practitioners for insertion of IUDs was abandoned in favour of full-time doctors engaged by the health centres. As a consequence, services are very hard to get, and the nine health centers of Seoul, a city with a population of over 6 million, are not able to provide adequate care for women desiring IUDs.

4. IUD insertion

Although field-workers are now allowed to distribute pills without the patient undergoing a physical examination by a doctor, the Republic of Korea has not yet given midwives or nurses permission to insert loops after special training. Women in the rural areas often hesitate to obtain a loop because of the absence of women doctors.

Other significant problems

1. Acceptors

During the 1960s, the number of eligible couples 20-44 years old was about 4 million. But, in the 1970s, this number will increase to about 5.5 million because of those born during the postwar baby boom. They will enter into the early reproductive age group during this decade. To meet this problem, additional personnel and increased budgetary outlays for family planning will be necessary—but they are hard to get.

2. Urbanization

The population of the Republic of Korea is becoming rapidly urbanized. This urban population being heterogeneous in character, it is difficult to approach through home visiting and group meetings. In the slums, the community does not enjoy modern mass media such as television. A series of KAP and fertility surveys has demonstrated that knowledge of family planning is higher in the rural than in the urban slums, which accounts for the latter generally having higher fertility rates than rural villages. This means that education and motivation programmes must be augmented for the urban people, as well as the provision of services. It cannot be assumed that the urban people are taking care of their own needs: they must also be given adequate help.

3. Cultural change

In reducing the population growth rate to 2.0 per cent a year, the completed family size has been reduced to about four children. To reduce the growth rate further to a two-child family involves many problems of cultural value that are most difficult to overcome. One of these is the desire for a male heir, so that

the ideal family is usually considered to be two boys and one girl. With this kind of value strongly rooted in the culture, is it possible to further reduce family size? At present, there is no answer to this problem through the normal means of education and motivation. Perhaps it will occur slowly, through modernization and urbanization. If so, the population problem will take much longer to solve, with a resultant prolongation of economic and social problems.

4. Modern contraceptive technology

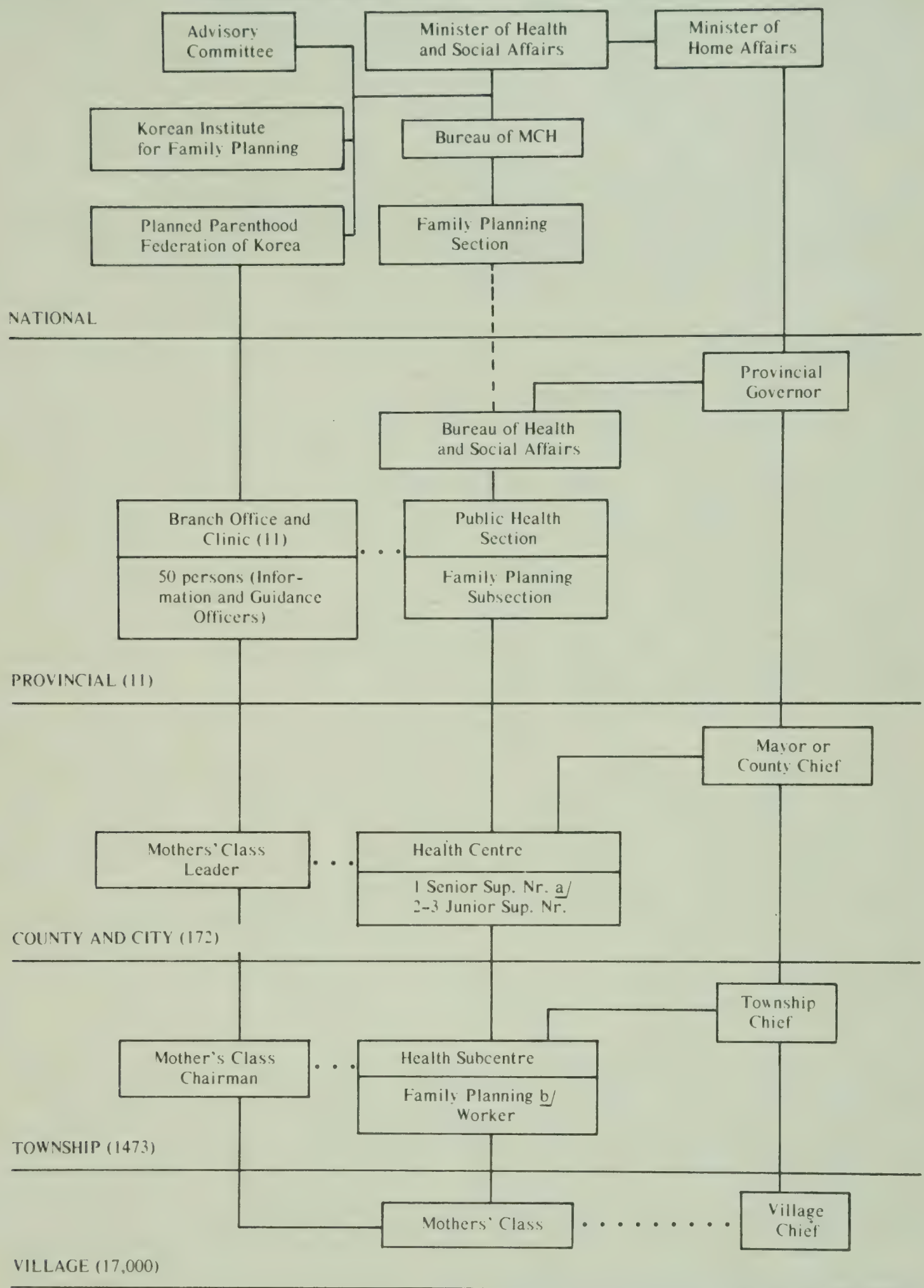
Current contraceptive technology, while much better than in the past, is still not appropriate for the average person with a limited knowledge of modern medicine. Side effects are dealt with in a non-scientific way and the first thought is to get rid of the cause rather than to wait for a natural adjustment to occur. Mass media reports of the controversy over the safety of the pill have increased the number of women who have stopped using oral contraceptives. Newspapers and other media always seem to publicize the bad news more than the good in such matters, making it necessary for the public to be less sophisticated in interpreting these reports properly. This will take more years of education before a satisfactory level can be reached.

Conclusion

The Republic of Korea's family planning programme has assisted significantly in a rapid drop in the fertility rate, contributing to national and personal goals of development. Through this effort, it has demonstrated to other developing nations the feasibility of such a programme. At present, it is providing services so that about one-quarter of the married couples are using contraceptives to curb their fertility. A growing number are also using abortion for this purpose.

At present levels of activity, the national programme will not be able to reduce fertility below the present rate. A greatly increased amount of effort will be needed, together with further resources both from national budgets and from donor groups. Unless something is done to increase the contraceptive use to about 40 per cent of married couples, the goal of reducing the growth rate to below 1.5 per cent does not seem feasible.

Organizational chart of the national family planning programme



a/ In cities, more nurses are assigned to family planning activities, and they actually take care of all education and motivation as there are no fieldworkers in urban areas; 898 nurses work in health centres for family planning.

b/ One field-worker in each township: a total of 1,473.

NATIONAL HEALTH SERVICES AND FAMILY PLANNING: THAILAND, A CASE STUDY*

by

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The world today is faced with a problem of unprecedented urgency, one that requires the co-operative efforts of many diverse groups if a solution is to be reached. During the past ten to fifteen years, it has become increasingly apparent that the rapid rates of population growth present one of the most serious problems facing the future of mankind, as we know it. The problems are particularly acute in the so-called developing world, where present growth rates are between 2 and 3 per cent per annum, a rate of growth that produces a doubling of the size of the population in roughly twenty-three to thirty-five years. This rate of increase produces probably the most serious obstacle to these countries' efforts at social and economic development. Because the rate of population growth is so high, many of the hopes and efforts aimed at bringing about improvements and development must, instead, be spent on maintaining the *status quo* of a rapidly expanding population.

The seriousness of the problem is well-recognized today by many donor agencies, and, as a result, the funding of family planning and population activities has multiplied many times in the past five years. It is doubtful whether any single problem has attracted a more diverse group of funding sources. Every member of the United Nations family of specialized agencies, most bilateral government agencies, private American foundations and universities, private voluntary agencies and many more are all giving high priority to helping find solutions to the problems. The most recent major donors, IBRD and the newly-created UNFPA (a part of UNDP) are bringing unprecedented resources to the field.

While there remains controversy and hesitation about this subject in some developing countries, an increasing number, particularly in Asia, have reached the conclusion that there is, indeed, a problem and have declared national population policies, although the commitment is often far less than that of the donors. Steps are being taken throughout the world, at varying rates of speed, to attempt to slow the exploding numbers of people inhabiting the world. Most attention has been focused on the development of national family planning programmes, although there are those who seriously question whether **voluntary** family planning can bring about a solution rapidly enough. (1, 2)⁺

Even when family planning programmes are accepted, at least as a necessary first step, there is much debate about the most effective way to implement

* The opinions expressed in this paper are the authors' own and do not necessarily reflect the views of their organization or those of the ECAFE secretariat or of the United Nations.

them, with a primary question being the role of national health services. It seems clear that present technology requires the participation, in a major way, of the health field. Sterilization, induced abortion, and the two most effective methods of contraception at present widely available—IUDs and hormonal contraception—generally require some sort of medical supervision, although to varying degrees. In the past, physicians have been required for all of these procedures, but there is increasing acceptance that there is no hope of delivering the necessary services if the small numbers of doctors currently available, particularly in rural areas, have to see every patient. (3,4) Thus nurses and auxiliary personnel are increasingly being required to insert IUDs and to prescribe oral contraceptives. Sterilization procedures require a physician because of the technical aspects and the same is probably true for legalized induced abortion.

The question has been raised, however, whether the health profession at present or in the future will give sufficiently high priority to family planning programmes to allow for the fastest possible solution. Complaints have been heard that one of the obstacles to the more rapid development of successful programmes has been the medical profession itself and the need to work through the health services. Among economists, demographers and others concerned by the critical nature of the problem, there are those who feel that there must be a way to carry out the activities in a unipurpose, massive campaign, and they suggest that this will not be possible through existing health services. (5) It is also argued that a great many other ministries and agencies need to be involved outside the health field, including people from such fields as education, agriculture and rural development.

Opposing this argument are those in the health field who feel that family planning activities are an integral part of MCH programmes, from which they should not be divorced. WHO has presented this argument most strongly, arguing that, in the long run, family planning integrated into the health system is the most reasonable and feasible approach to a solution, although it is accepted that many others must also assist. (6)

As a result of arguments such as these, family planning programmes have developed in different ways in a variety of countries. In some cases, the programmes have utilized full-time family planning workers, referring potential acceptors to governmental or private medical facilities for services. Some countries have developed an autonomous family planning infrastructure, (7-9) some others have established full-time national co-ordinating boards which work in co-operation with existing agencies, (10) while a few have integrated the activities totally into an existing infrastructure, usually the health system. (11,12) All the approaches have led to both successes and problems, and it is clear that there is no one organizational system that will be best for all countries. But, in most instances in which a totally separate infrastructure has been created and where there was already also a governmental health infrastructure, there have been many problems due to lack of co-operation and co-ordination between the new family planning system and the old health network.

* The figures in parentheses relate to the bibliographical references at the end of the pages.

In view of the truly critical importance of producing a decrease in the present high rates of population growth as rapidly as possible, it would be ideal if family planning programmes could be conducted outside the health structure, since there are multiple problems in the delivery of health care, one of the most serious being understaffing of all categories of health workers. Nonetheless, with the present state of family planning technology, it appears necessary that services be offered through the existing health network. The remainder of this paper will relate the experiences in Thailand, where the basic family planning programme was organized, planned and implemented primarily through the rural health and hospital services of the Ministry of Public Health. While there are aspects of the Thai programme that are probably not reproduceable, and it is not suggested that the activities reported here should necessarily serve as a model for other countries, the programme, in its first 4 1/2 years, has been successful and suggests that health services can be organized to at least begin the job needed, without seriously interfering with other activities.

Background

Thailand is a predominantly Buddhist country with a population in 1972 of approximately 38 million people. Over 80 per cent of the people live in rural areas, and most have had up to four years of education. As in most developing countries, the age structure is such that over 40 per cent of the total population is under the age of 15 years, thus producing a serious burden on the developmental efforts of the country. Until 1958, the Government had an essentially pronatalist policy, believing that quantity brought strength. Only after a 1958 World Bank economic mission concluded that the growth rate was too high and was adversely affecting economic and social development did the Government first begin to study the problem.

As a result of the World Bank's recommendation, a series of seminars and committee meetings were held, which, in turn, led to a survey and demonstration project in a rural district of about 75,000 people. The survey revealed that approximately 70 per cent of the eligible women questioned in a baseline survey did not want more children than they already had, but most did not know how to prevent pregnancy. (13) During an 18-month action programme over 30 per cent of the eligible women accepted family planning services, the majority accepting an IUD (the Lippes Loop). (14) Despite the well known problems with the IUD, a follow-up study four years later demonstrated that over 40 per cent of the original acceptors still had the original IUD *in situ* and an additional 10 per cent had had a reinsertion, were practising another method or had been sterilized. (15)

During 1966, as understanding and increased concern became apparent, several important developments took place. Two population study centers were created, one called the Population Research and Training Center (later renamed the Institute of Population Studies) which offered a master degree programme in the field of demography and initiated an important national longitudinal survey of economic, social and fertility change; the other, the Center (later Institute) of Population and Social Research, which is concerned with programmatic research studies. Also in 1966, the Population Council initiated its international post partum programme and Thailand was the only country outside the United States in which several hospitals in one city were chosen to take part in the study.

Four Bangkok hospitals, each of which provided care for over 10,000 obstetrical patients per year, joined the programme and, as will be discussed below, have all run remarkably successful family planning clinics.

The national family planning programme (formerly the family health project)

In late 1967, the Under-Secretary of State for Public Health directed that a national "research" family planning project be prepared. The Under-Secretary, together with a small number of other key Ministry officials were seriously concerned about the problems related to the high rate of population growth and felt that it was necessary to begin to prepare services, particularly in the rural areas of the country, for women who had no other access to family planning services. They stated that the project was to help the Ministry to prepare for the time when the Government would declare an official national population policy, an eventuality of which they were certain, although when was not clear.

Because of the lack of official governmental support, no consideration was given to the establishment of a separate family planning infrastructure. It was clear that an approach integrated within existing health services was the only approach that would be acceptable to the Government. But, more than that, there was a conviction that, at least for Thailand, the integrated approach made good sense. While, admittedly, there were many problems within the Thai health system, there was, at least, a reasonably good infrastructure already in existence, and the use of these personnel and facilities reduced both the cost of the activities and unnecessary duplication. Also, in Thailand, improvement of maternal and child health was one of the objectives of the development of a family planning programme on a national basis.

Between 1968 and mid-1970, family planning activities were carried out under the euphemism, the family health (research) project, in which the project was carried out very quietly, with no public information activities, without special full-time family planning workers, without targets and without incentives. The three-year plan (1968-1970) called for short training courses in the field of population and family planning for at least one doctor and one nurse from each of the 84 provincial hospitals and all doctors, nurses and auxiliary midwives working in rural health services throughout the country. After completion of the training courses, family planning clinics were to be opened in all hospitals and health centers staffed with a physician. In the early years of the programme, clinics without physicians were assigned the duty of providing information and motivation to potential acceptors and also to distribute resupply of oral contraceptives.

The policy foreseen by the Ministry of Public Health (MOPH) was finally declared in March of 1970, when the Thai Cabinet accepted a report prepared by the National Economic Development Board, in conjunction with MOPH and the Institute of Population Studies at Chulalongkorn University. The Cabinet announced an official national population policy which called for the lowering of the excessively high rate of population growth through the practice, voluntarily, of family planning. MOPH then created an official national family planning programme to carry out this policy under the direction of a national population

Figure 1 Population and family planning organizational chart

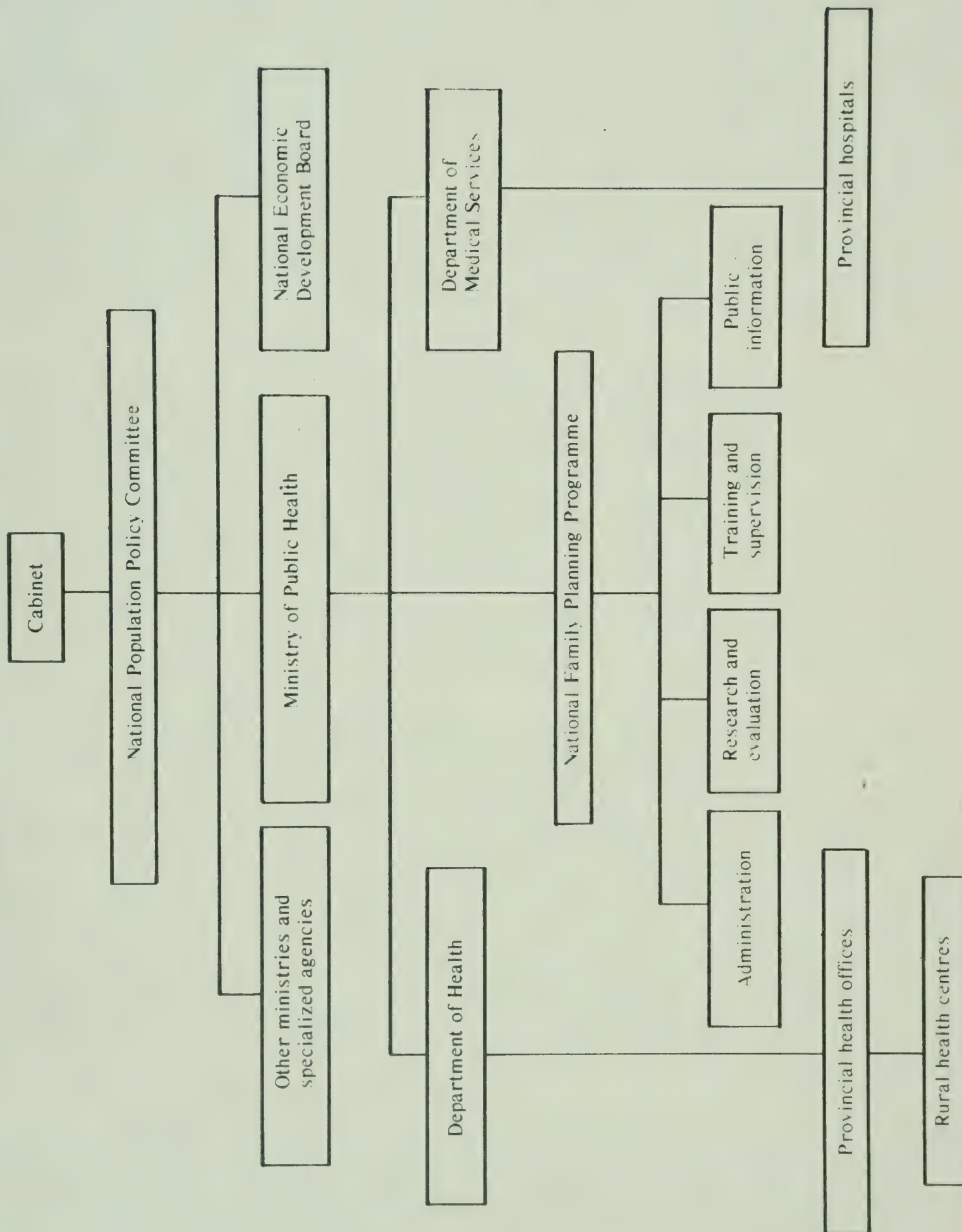
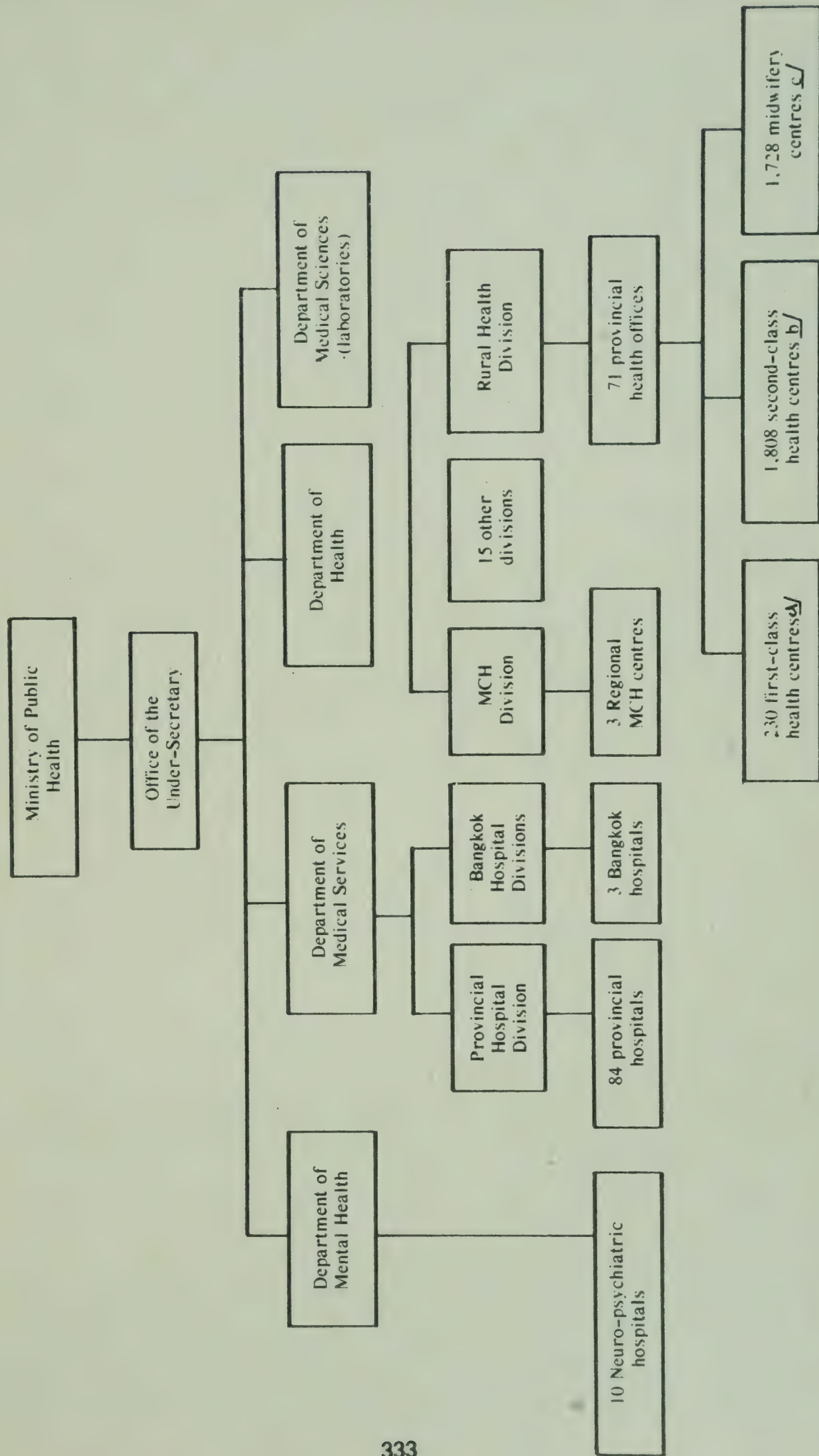


Figure 2. Ministry of Public Health-organizational chart



^{a/}Staff - M.D., nurse, auxiliary midwife, sanitarian
^{b/}Staff - Auxiliary midwife, sanitarian.
^{c/}Staff - Auxiliary midwife.

policy committee. The basic objective of the five-year plan which was then developed (1972-1976) was to reduce the population growth rate from over 3.0 per cent to 2.5 per cent by the end of 1976, through the provision of family planning information and services as widely as possible through the country. The training and the opening of clinics during the period 1968-1970 allowed MOPH to move ahead after the policy declaration, with an impetus already created.

Organization: Because the programme has been integrated into the health services of MOPH, with a full-time family planning staff only in the central Bangkok office (figure 1), it is necessary to present briefly the organizational structure of MOPH (figure 2). In Thailand, most modern medical care is provided through governmental health services, with the Ministry providing the bulk of care outside the capital city of Bangkok-Thonburi. The Ministry is divided into three departments, with the Office of the Under-Secretary acting as the co-ordinator of Ministry activities.

The Department of Medical Services operates a total of 84 provincial hospitals, with anywhere from 50 to 450 beds in 69 of the 71 provinces, plus three hospitals in Bangkok (several other large Bangkok hospitals come under the jurisdiction of other ministries). The Department of Health is responsible for curative and preventive rural health services, through a large network of three classes of health centres under a provincial health officer in each province. There are close on 4,000 health centres throughout the country, most of which are staffed by auxiliary personnel. There are some 220 centres designated as first-class, and supposed to have a physician in residence; unfortunately only about 160 actually have a physician. The remainder of the centres are either staffed by an auxiliary midwife and a sanitarian or just by an auxiliary midwife. The smallest unit, the midwifery centre, is supposed to cover a population of from 2,000-3,000 people.

As is true in many other countries, more than half of all doctors in Thailand live and work in Bangkok, most working in government hospitals or urban health centres, but some working full-time in private practice. The doctor: patient ratio in Bangkok is a respectable 1:1,000, but for the rest of the country it is about 1:35,000 people. Even this figure is misleading since most of the doctors outside Bangkok live in the provincial capital towns, working in the provincial hospital, so that the ratio in the more rural areas is only one doctor for approximately 110,000 people. In the cities most doctors have private practices after the government working hours are finished; but there are very few physicians with private practices outside the capital towns of each province. There is a similar maldistribution of nurses, but the majority of auxiliary personnel work in the rural areas rather than in the cities. Thus, given the existing situation, much emphasis had to be placed on this latter group of personnel, as will be discussed below.

Training: Because there were over 4,000 people to be trained during the three-year plan and because of the very limited training staff, a training sub-committee decided that all courses would be of one week's duration, although it was realized that longer periods of training were desirable. Further, the sub-committee decided that there was neither the necessity nor the opportunity to create family planning training centres at the national, regional or provincial

level, as had been advocated in the programme of some other countries. Rather, the plan was to use existing facilities in training centres or, in most cases, simply in buildings with rooms that could be used as class-rooms.

The essentials of population dynamics were taught in all courses, with particular emphasis on the effects of rapid population growth on various aspects of socio-economic development in Thailand. In addition, methods of contraception to be used in the programme were described in detail. These included IUDs, oral contraceptives and sterilization. All physicians and nurse-midwives were trained in Bangkok in a Department of Health conference room. For the training programme the Family Health Project had one experienced physician and four public-health nurse-midwives, who served as the basic training staff. In Bangkok, however, physicians, social scientists, and other personnel experienced in population and family planning from the three medical schools, the School of Public Health, the two population centres, as well as from MOPH itself, participated in the training programme, demonstrating unusual cooperation between various governmental agencies. For both physicians and nurse-midwives, four Bangkok hospitals (all of which were the original Thailand participants in the international postpartum programme) served as clinical training sites, particularly providing practical training in IUD insertion for physicians.

Because of the large numbers of auxiliary midwives requiring training (over 3,000), all could not be brought into Bangkok. Training for these key personnel, therefore, was conducted in the provinces, with whatever class-room facilities could be found in each province. Nurse-midwife trainers from the central office travelled to the provinces to organize and supervise the training courses, assisted by physicians and nurse-midwives of the province concerned who had received training previously in Bangkok.

Courses for auxiliary midwives stressed information about methods of contraception, so that the midwives would be well prepared to answer questions that were bound to arise concerning these methods, as well as to be able to counter fears and rumours that would develop. Because of the desire to provide uniform training to all paramedical personnel, a method of instruction new to Thailand was developed: programmed instruction. Previously-prepared programmed instruction manuals on family planning from other countries were reviewed, but it was felt that all manuals available in 1968 had been prepared with the physician in mind and that were they not suitable for most paramedical personnel. Therefore, with the assistance of a short-term consultant, an entirely new set of manuals was prepared, one an introduction, which included some basics of reproductive physiology and a review of traditional contraception, the second on the IUD, the third on hormonal contraception, and a fourth that served as a general review of the previous manuals.(16) This new set was supplemented with discussions on the methods, as well as didactic lectures on other aspects of population and family planning. The programmed instruction manuals have proved most successful in the training programme, with a significant increase in knowledge and understanding as demonstrated by pre- and post-examinations. The manuals have since been adapted for use in a series of other country programmes, including the Republic of Korea, the Philippines and Ghana. Attempts were also made to develop pertinent role-play training and field practice, but these were not as successful as hoped.

During 1970, brief, two-day indoctrination courses were also developed for male health workers in all provinces so that they too would be familiar with the aims of the programme. It was hoped that these male workers would then be in a position to assist in the programme's motivational aspects. Over 7,000 members of MOPH personnel have received training in the field of population and family planning in the four years, 1968-1971 (table 1).

Table 1: Training, Thailand: 1968-1971

Classification	Year				Total
	1968	1969	1970	1971	
Physicians	87	102	141	100	430
Nurse-midwives	174	203	323	170	874
Auxiliary midwives	948	1,003	1,139	729	3,819
Sanitarians	-	-	1,985	-	1,985
Family planning clinic workers	-	-	20	80	100
Total	1,209	1,308	3,608	1,079	7,204

Admittedly, the courses were too short, some aspects of the course were not carried out as effectively as hoped, some trainees did not take the training as seriously as they should have, the courses were not evaluated in a systematic way, and there were many other problems. Nevertheless large numbers of health personnel received some training in the field of family planning and were thus better informed than they had been previously. Perhaps of greater importance, they learned that the Ministry felt that family planning was an important health duty of each of the categories brought in for training.

Public information: During the early years of the programme the Government did not allow any public information activities about family planning. Even the commercial drug-houses were limited in what they were allowed to do in this area. MOPH, therefore, did not undertake any public health education programme, but stressed instead simple person-to-person communication. There already was evidence in Thailand that this was a most effective means of the spread of information. In 1965, a family planning clinic had been opened by the Chulalongkorn Hospital. During the clinic's first three years, patients came from 65 of Thailand's 71 provinces, without any attempt to spread information about this clinic; the acceptors simply learned from friends or satisfied acceptors. (4) By the end of 1971, this same clinic was to be the largest IUD clinic in the world, with over 68,000 acceptors since it opened in 1965. (17)

When the Government announced a national population policy in 1970, the restriction on public informational activities was removed, although it was recommended that such activities be limited to the reasons for and places of family planning and that the methods of contraception should not be discussed

publicly. For a variety of reasons, most of the activities in this field were being developed during 1972 and very little activity was organized on a national basis between mid-1970 and early 1972. During 1971, however, an ambitious, broad-based public information campaign, including the use of the various mass media, was developed on a pilot basis in one province. It should be emphasized that, although there were none of the usual mass promotional aspects of a public information programme, both MOPH personnel and, more important, satisfied acceptors, served as communicators about family planning, this being one of the single most effective means of communication available. (18)

Services: Following the completion of the individual training courses, family planning clinics were to be opened in the provincial hospitals and in those rural health centres staffed with a physician. In their areas of coverage, the auxiliary midwives were expected to provide motivation and information to couples, referring those interested in services to the health centres and hospitals. By mid-1970 there were close on 350 clinics in hospitals and health centres throughout the country where oral contraceptives and IUDs could be obtained. Female tubal ligation was available, primarily as a post partum procedure, in about 90 hospitals, with the majority of them being performed in a small number of hospitals.

After the successful conclusion of a pilot study in which auxiliary midwives in four provinces were allowed to prescribe the pill without requiring prior consultation with a physician, the Ministry ruled, in mid-1970, that auxiliary midwives throughout the country could prescribe the pill primarily. (19) Because it was felt that the basic family planning training course was sufficient to prepare the midwives to carry out this new duty, this ruling increased the number of family planning clinics to almost 3,500.

In 1968, there were approximately 57,000 acceptors of the IUD, pill and female sterilization. By 1971, the total number had increased dramatically to over 400,000 new acceptors, as shown in figure 3. There had similarly been a dramatic change between 1968, when IUD acceptors outnumbered pill acceptors 3:1, and 1971 wherein IUD acceptors had increased from 35,300 to 86,034, but pill acceptors increased from about 10,000 to 225,439, producing almost an exact reversal in the IUD: pill ratio. Thus the number of pill acceptors increased from approximately 10 per cent of the total in the early years to 73 per cent in 1972 (figure 4). Similarly, by 1971, most acceptors received services in rural health centres throughout the country, whereas in the earlier years there was a predominance of acceptors in urban hospitals, particularly in Bangkok (figure 5).

Role of nursing and auxiliary personnel: The increase in numbers of pill acceptors is a dramatic example of the effectiveness of an expanded role for nursing and auxiliary personnel in family planning programmes. During the one-year four-province pilot study, there was an increase of 395 per cent in the numbers of pill acceptors between the six-month period before and after the beginning of the study. (19) The 160 auxiliary midwives in the provinces concerned actually recruited more pill acceptors during the first six months of the study than all health personnel in the 13 control provinces, in which there were 783 auxiliary midwives trained in family planning, but who were not allowed to prescribe the

Figure 3. Acceptors, by method and by year, 1968-1971

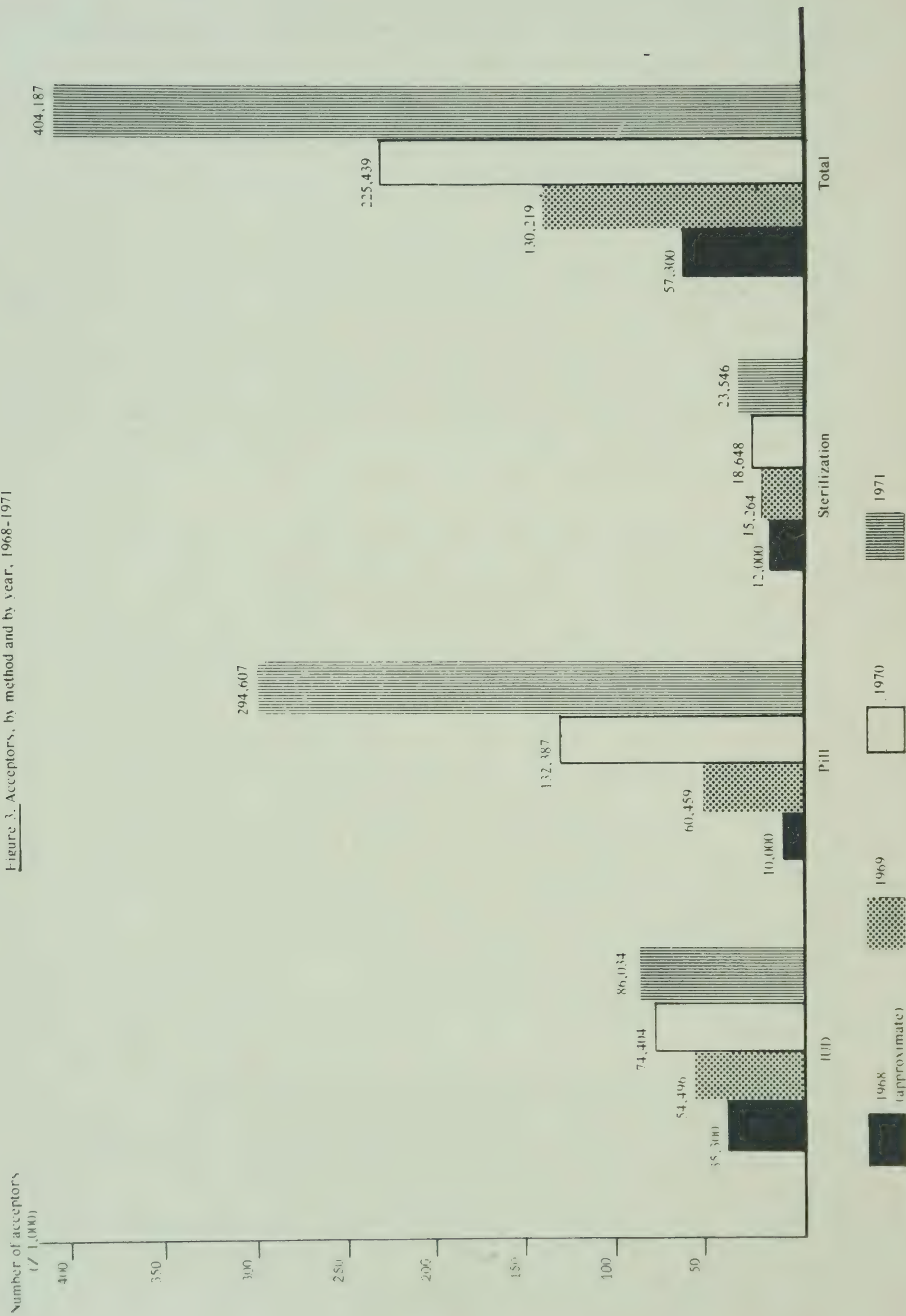


Figure 4. Percentage of acceptors, by method and by year, 1965-1971

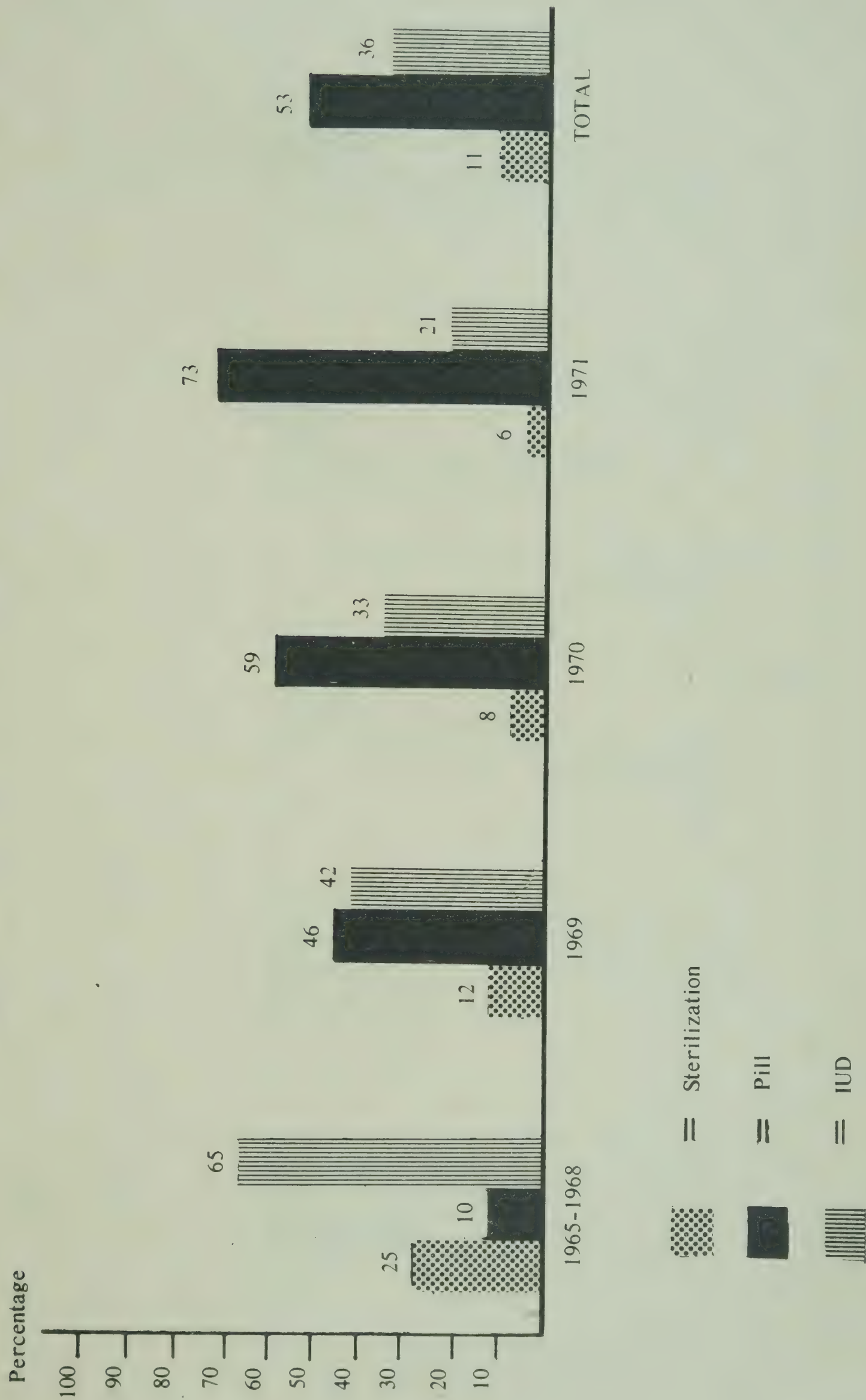


Figure 5. Percentage of acceptors, by organization and by year, 1965-1971

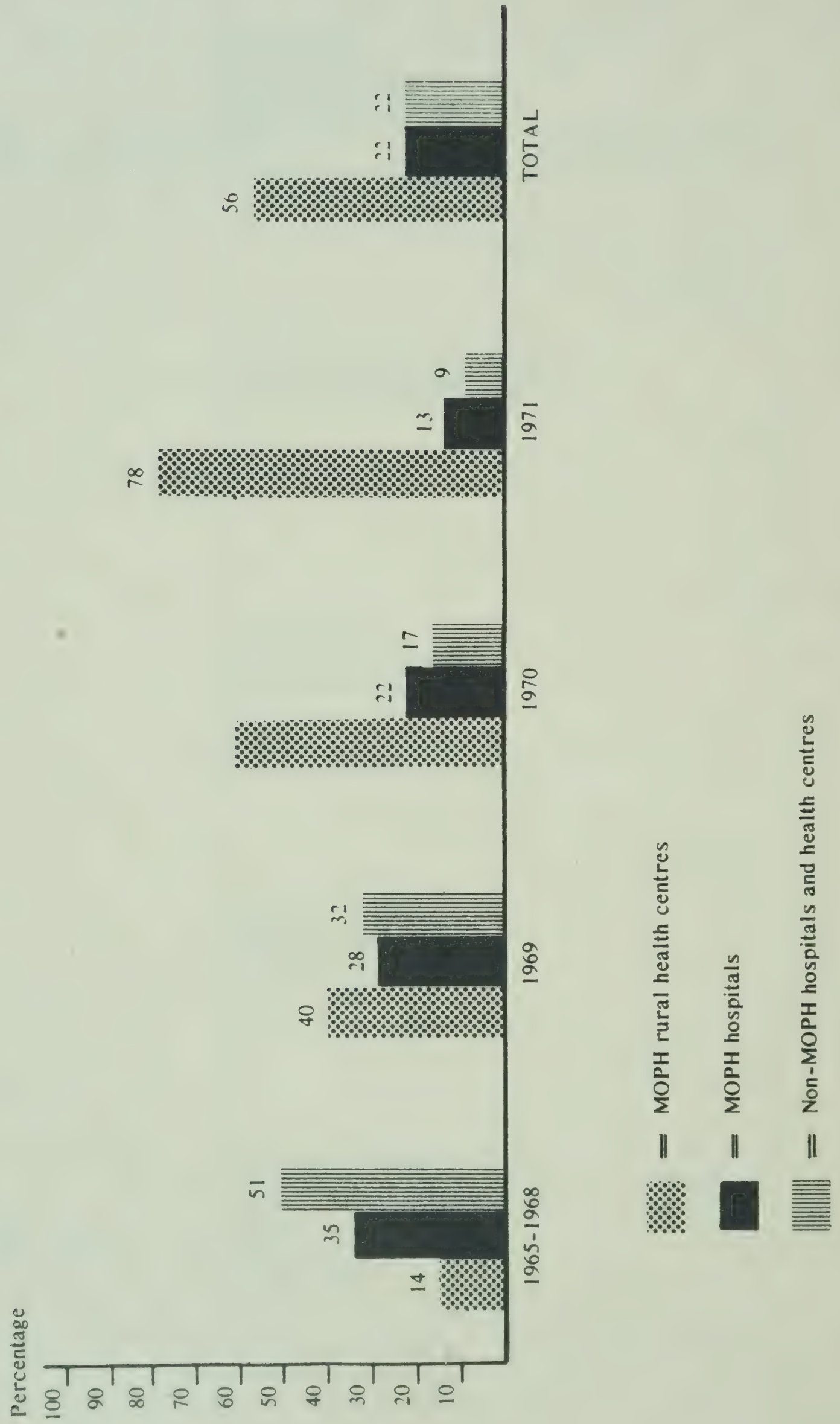


Figure 6. ACCEPTORS, by six-month period, 1969-1971



pill. Interestingly, in a home interview follow-up study conducted one year after received the pill from auxiliary midwives than were the rates among women who the study began, the 12-month continuation rates were higher among women who received them from physicians. One reason may be that the auxiliary midwives are more accessible to the acceptors, both physically and socially, than are physicians.

When MOPH reviewed this project and decided that all auxiliary midwives who had already been trained could prescribe the pill, the national programme then moved forward at an even faster rate than expected. Figure 6 presents the acceptors, by method, for each six-month period between 1969 and 1971. As can be seen, the ruling concerning the auxiliary midwives resulted in an almost immediate increase in pill acceptors, and thus in the over-all totals.

The eventual target of the national programme was to have about 8 per cent of the eligible population accept family planning services (pill, IUD or sterilization) each year. In the four-province pilot study, approximately 3 per cent of the eligible couples were reached in six months, while in the thirteen control provinces only 1 per cent accepted some method of family planning. This was perhaps the first indication that the national target would be most difficult to reach if the small numbers of physicians were to be required to see all new acceptors of contraception. When the medical complications and contra-indications were reviewed, and after weighing the risks and benefits to be gained, a recent paper recommended that nursing and auxiliary personnel be allowed to prescribe the pill, without the requirement of a pelvic examination, and further that, with appropriate training, they might also insert the IUD. (3)

The total number of new acceptors in 1971 accounted for about 8 per cent of the eligible couples, the target originally planned for 1973. MOPH has now initiated a special training programme to teach nurse midwives the technique of IUD insertion, the next practical step that is necessary. It is strongly felt that better use must be made of nursing auxiliary personnel, particularly in the developing countries. It is only practical to accept that doctors are not required for all such services.

The post partum programme: In 1966 four Bangkok hospitals joined the international post partum programme, an international co-operative study. In 1969-1970, the programme was expanded to eleven MOPH hospitals located outside Bangkok, which served a primarily rural population. Eight of the hospitals belonged to the provincial hospital network of the Department of Medical Services. The other three formed part of a new category of facility in Thailand, the MCH centres, which include an auxiliary midwifery school and a 60-80-bed maternity hospital. (20) All the hospitals in this expanded programme provide care for anywhere from 1,500 to 7,000 obstetrical and abortion cases per year, with a mean of 3,700 cases per year.

The programme has been described in some detail in a recent publication. (21) Suffice it to say that it has been one of the most successful in the international study. The programme in each participating hospital stresses the provision of information and motivation to maternity patients in the antenatal clinics, in the labour rooms and, most particularly, in the post partum wards.

Immediate post partum IUD insertion is offered every day, with the insertion usually done on day 2-4 post partum. (22) Thailand has been a leader internationally in the insertion of the IUD in the immediate post partum period and has been responsible for over 70 per cent of all immediate post partum insertions reported in the international programme. To date, there has not been any increase in infection or perforation, although the expulsion rate is slightly higher than in the regular IUD insertion cases.

Table 2 summarizes the programme data for Thailand, by category of institution. The most dramatic successes have been noted at Chulalongkorn Hospital, where close on 70,000 IUD acceptors (50,000 of them in the post partum programme) have been seen, and at the MCH centres, where an average of 64 per cent of all obstetrical and abortion patients accepted family planning services, the majority accepting an immediate post partum insertion of an IUD or sterilization. One of the centres actually had 85 per cent of obstetrical patients accept during the first year of the programme (1969) and another had close on 45 per cent of obstetrical patients undergo a tubal ligation, a record in the international study. The 15 hospitals in the study accounted for 22 per cent of the 225,439 acceptors in the over-all national programme in 1970 and 16 per cent of the 404,187 acceptors in 1971.

Table 2: Obstetrical cases and acceptors per month,
Thai post partum programme, 1966-1971.

Institutions	Obstetrical and abortion cases (average per month)	Acceptors (average per month)		
		Total	Direct ^{a/}	Immediate ^{b/}
4 Bangkok hospitals	5,642	1,810	928	742
3 MCH centres	812	1,031	493	409
8 Provincial hospitals	2,754	1,489	691	567
TOTAL	9,292	4,330	2,112	1,717

a/ Those accepting within three months after delivery or abortion.

b/ Those accepting prior to discharge after delivery or abortion.

Evaluation: Because it was felt that existing evaluative facilities were already over-taxed, MOPH decided that a special section should be created to allow for continuous and rapid evaluation of family planning programme activities. Project personnel developed a special patient record form in which the original (thin paper) is sent to the central evaluation unit while the duplicate, a thicker cardboard record, remains at the clinic. The record form contains both a basic demographic questionnaire that allows for continuing analysis of the character-

istics of the acceptors in the programme and a medical questionnaire and examination. In addition, a special monthly report form is prepared in triplicate, one copy being sent directly to the central evaluation unit, a second copy through normal reporting channels, and the third remaining at the clinic. In the clinics staffed by a physician, these reports are prepared directly, but in health centres without physicians, the monthly reports are collected at district level where a combined report for the district is then submitted according to the above procedure.

During 1970-1971, over 90 per cent of all units participating in the programme were submitting reports on time. In addition to reports from those clinics within MOPH, reports are also received from non-ministry sources that provide family planning services, including the four medical schools, 21 clinics of the Bangkok Municipal Health Bureau (not under the jurisdiction of MOPH), and other governmental and private agencies.

It is the responsibility of the central evaluation unit to send out to all participating clinics a national monthly report that summarizes the activities throughout the country, by agency, region, and province. These reports are generally prepared and mailed within eight weeks after the month concerned.

Analyses of patients' characteristics are carried out periodically. The results have not changed significantly over time and have revealed, in general, that approximately 80 per cent of all new acceptors live in rural areas, mostly working as farmers, and over 90 per cent have had four years or less of formal schooling, with only 2.5 per cent having attended school beyond the tenth grade. The acceptors have been younger than in some other programme, with over 50 per cent being under 30 yr of age. In addition, two-thirds of the acceptors had had four or fewer living children. The majority accepted services for purposes of limitation and almost half accepted within six months after the last pregnancy, indirect evidence of the importance of the post partum concept. (18) Finally, over 80 per cent had never practised contraception before. Of particular importance has been the fact that the Thai programme has been reaching rural women of lower socio-economic status, the primary target for assistance in general by the Government.

During 1968-1971, the first four years of concerted effort on the part of MOPH, approximately 15 per cent of the married women between 15 and 45 years accepted family planning services at government facilities and an estimated additional 5 per cent accepted before 1968 or received contraceptive services outside the government programme.

There have been a series of home interview follow-up surveys of acceptors in the national programme. The most recent one was conducted on a national sample of acceptors in 1971; the others were more selected studies, with the first one in 1969. The continuation rates, particularly for the pill, are among the highest reported from national programme in Asia. To summarize, the 12-, 24- and 48-month continuation rates for the IUD (in the 1971 survey) were 76 per cent, 63 per cent and 48 per cent respectively. For the pill, the 12-month rate was 68 per cent and the 24-month rate, 53. It is suggested that these rates may be higher than those reported from other programmes because the Thai

programme has not used incentive payments either for the health staff or for acceptors, no formal targets per worker or per clinic were established, and most acceptors pay a small fee for service. Thus, perhaps the Thai acceptors are more highly motivated, therefore continuing use is longer. The higher continuation rate holds even though the acceptors in Thailand are relatively young and of low parity, which might have been expected to lower continuation rates since more should have accepted for purposes of spacing.

Budget: In the early years of the programme donor assistance was most important as there were no special funds allocated for family planning. But, because the programme was totally integrated, there were many indirect costs covered by existing budgetary funds, particularly for the Ministry personnel and facilities utilized. Gross estimations of this indirect funding suggest that the amount has risen from approximately \$US 190,000 in 1968 to over \$US 1 million in 1972. Between 1968 and 1971, major assistance was received from USAID, which provided oral contraceptives, clinic equipment, vehicles and fellowships; and from the Population Council, which provided IUDs, fellowships, advisory services and local currency for a variety of central office needs and for training. UNICEF also provided a small amount of funding for local costs related to training activities. Beginning in 1972, in addition to the above agencies, UNFPA will become a major donor, in co-operation with WHO, UNICEF, and UNESCO, through the support of six different projects. In addition, the Government of Denmark has made a generous grant to allow the national programme to build a much-needed new central office building.

Problems and conclusion

While the foregoing presents a relatively successful story, it would be inappropriate to suggest that the Thai programme has developed without its share of problems and difficulties. A major problem has been the lack of strong governmental support. There still remain influential government leaders who do not feel that there is a need for a family planning programme and some who actually oppose the government taking any action in this field. Many still do not understand the social and economic problems related to the high rate of population growth.

Thus, although the World Bank raised the issue in 1958 and in spite of a large number of committees and meetings, the first year that there is an official budget specifically for the family planning programme is 1972, a delay of fourteen years. Even this first budget is a small one, slightly over half a million dollars, and although an increase is expected in future years, the total amount remains quite small. It has been difficult to convince the budget people that the programme is of great importance in helping the government to reach its objectives in the new five year social and economic development plan.

As is true throughout the world, intra- and inter-agency co-operation, co-ordination and collaboration need to be strengthened, so that all are working towards the same goal, in this case that stated by the Thai Cabinet, to lower the birth rate. Formal and informal co-operation within and between agencies is vital to the success of a programme such as this. It follows that various agencies which have close contact with the people, including those responsible for com-

munity development, agricultural extension and various levels of formal and non-formal education, need to assist the service activities through the spread of information and education about family planning.

A problem of great importance in the health services, and more specifically in the family planning programme has been the lack of a strong supervisory system. For a variety of reasons, some of which are cultural in nature, the supervision of the field staff is superficial and, in some cases, non-existent. A truly efficient field programme is dependent on close and effective supervision at all levels, particularly to improve the performance of the less-productive clinics and personnel, and this is an area to which the national programme is now giving close attention. Similarly, the development of a more effective reporting system, so vital to all programmes, is dependent on supervision. Repeated checks are needed to ensure the necessary accuracy.

Rumours and fears are problems in many health programmes, and, because of the nature of family planning activities, they can be particularly important. In the development of a broad-based communication programme this area must be given high priority. The Thai programme is only now developing a major information programme, but the rebuttal of rumours may best be handled through personal contact with the health personnel. One needs to continue to lay stress on this area as the programme expands.

There remains a general conservatism which has slowed down the development of the concept of the use of personnel other than physicians to prescribe the pill or to insert the IUD. Fortunately, this conservatism has now been overcome and a more realistic and practical approach has been taken. In almost all Asian countries, there simply are not enough physicians and use must be made of other personnel in order to get the work done. Traditionally it has been felt by many that only physicians could carry out many routine jobs that, with appropriate training, many types of personnel with less basic education can do quite well. We feel, for example, that insertion of a IUD or prescription of the pill is such a job.

Because of the integrated approach and the lack of incentive payments, the Thai programme has not been faced with the problems seen in some other programmes concerned with getting the payments to the family planning workers. There was already an established mechanism of payment for health personnel and the family planning programme did not necessitate any changes in the system. Even the small number of full-time family planning clinic workers who recently have been added to the programme have not given rise to any problems because their salaries are fixed and are paid through the same system as other workers.

The small percentage of the country's women (about 20 per cent) receiving obstetrical care is a most serious problem. Better maternal (and infant) coverage must be provided in order to lower maternal and infant mortality rates, as well as to expand family planning activities, utilizing the post partum concept. It is hoped that a pilot study of the accelerated development of MCH (and family planning) services will help to bring about significant improvements in this area, first in the pilot provinces and later nation-wide.

The increasingly large numbers of cycles of oral contraceptives being distributed through the programme has required a review of our logistical system. At the present time, there is difficulty in maintaining an up-to-date record of supplies on hand at each level of distribution, and we are now in the process of revising the system of reporting to one which will allow us to follow the distribution continuously. Here again close supervision is needed to ensure that depots are stocked, that the supplies are reaching the people for whom they are intended, and that excessive fees are not being charged. To date, the programme has been fortunate and has only run short of pills on one occasion during the first year of the programme. The pills have been supplied by USAID which has worked very closely with the Thai staff in maintaining adequate reserves.

Finally, Thailand has not yet faced the question of abortion. While there are many who feel that this is the only method of family planning, combined with contraception, that can bring down birth rates as rapidly as is thought necessary, the time has not yet come for Thailand to consider the issue squarely.

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TOPIC 6: ECOLOGICAL IMPLICATIONS OF RURAL AND URBAN POPULATION CHANGE AND OF POPULATION TRANSFERS.

MIGRATION, DISTRIBUTION OF POPULATION AND DEVELOPMENT, WITH PARTICULAR REFERENCE TO JAPAN*

by

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In discussing the ecological implications of rural and urban population change, extremely complicated interrelations between regional population change (in particular rural and urban) and environment, have to be examined. Environment may be understood as a complex, encompassing all those physical, social, economic and cultural conditions which may affect the general well-being of the individual and the community. ^{1/} Full evaluation of the ecological significance of rural-urban population redistribution seems to be impossible, primarily because of the scarcity of the necessary statistics and surveys. Statistics on migration, redistribution and environmental conditions is far scantier. Although environmental disruption has rapidly become of serious concern to policy-makers and the general public in the last few years, investigation of the ecological relevance of the regional distribution of population must rely on limited evidence from individual fragmental studies which usually lack the generality required for much broader application. More often the evidence they present is little more than speculative.

Because of reasons of non-availability of internationally comparable data on migration in this region and the lack of any systematic evidence demonstrating the ecological implications of population distribution, this paper focuses on the experience of Japan where, on the one hand, migration and redistribution of population have been drastic and, on the other, environmental disruption has been seriously aggravated. Demographically speaking, Japan is characterized by rapid demographic transition and exceptionally accelerated migratory movement in association with economic progress and social change.

Trends in migration and distribution of population

The mobility of population, in particular the labour force, is as vital to economic growth as the flow of capital. There is no stage in the development of Western capitalism when labour mobility has not been a prominent characteristic nor a necessary condition of change. Continuous economic growth without

* The opinions expressed in this paper are the authors' own and do not necessarily reflect the views of their organizations or those of the ECAFE secretariat or of the United Nations.

^{1/} S. Goldstein, "Interrelations between internal migration and the environment in the ECAFE region" (POP/Sem. ERUP/BP/4), p. 6, was prepared for the ECAFE regional seminar on ecological implications of rural and urban population growth (1971).

labour mobility is unattainable. 2/ Japan is not an exception. Rapid economic growth in the postwar period would not have been possible without rapid, tremendous shift of population from rural to urban areas to meet the strong demand for labour created in the latter areas.

It should be noted that migration in Japan is characterized throughout by the traditional nature of the basic rural-urban migration pattern. Table 1 shows the continuity of migratory flow, from rural and less industrialized to urban and more industrialized areas, between 1920 and 1970 (1920 being the first time a modern census was taken).

For nearly half a century (and for some time before that as well) only two regions continued to gain population without interruption through net immigration. They are Minami-Kanto (actually called Tokyo metropolitan area, including Kanagawa, Saitama, Chiba prefectures and Tokyo metropolis) and Keihanshin (the Osaka-Kobe-Kyoto metropolitan area, including Osaka, Kyoto and Hyogo prefectures). Eight out of 13 regions continued to lose population without interruption through net out-migration. They are Tohoku, Kita-Kanto, Hokuriku and Tosan, Kinki, Sanin, Sanyo, Shikoku and Minami-Kyushu, comprising 30 prefectures, with only the exception of Kinki for the latest five-year period. The remaining three regions, namely Hokkaido, Tokai and Kita-Kyushu, indicate fluctuations in net migration for half a century.

It is clear that the basic pattern of migration has been dominantly oriented to centripetal concentration in the two metropolitan areas, that is Minami-Kanto and Keihanshin. In other words, migrants from all rural areas in Japan continued to move into two large urban areas in which Tokyo and Osaka are central cities. Both cities competed in absorbing population with nearly equal capacity previously, but, in the postwar period, Tokyo has come to be far stronger in pulling population than Osaka. 3/

In general terms, the traditional pattern of rural-urban migration has been dominant throughout the history of economic development in Japan. Basically, two underlying factors motivated this type of migration. One was the regional differentials of population reproduction. Traditionally high reproductivity of population in rural, agricultural areas tended to push out surplus population. It was a process by which population pressure in rural areas resulting from higher fertility was alleviated. The other factor was the regional disparity in economic activities and levels of living between areas. People tend to move from underdeveloped areas with lower levels of living to highly developed areas with high levels of living. Remarkably, it has been noted that, in Japan, the highly developed areas had a lower level of population reproduction, and, on the contrary, underdeveloped areas had a higher level of population reproduction. 4 These two distinctive levels of economic and population development in the urban

2/ J.H. Smith, "The Analysis of labour mobility", in *Manpower Policy and Employment Trends*, (London, G. Bell and Sons Ltd., 1966), p. 89.

3/ T. Kuroda, "Continuity and transformation of migration behaviour", *English Pamphlet Series No. 71*, Institute of Population Problems, 1970.

4/ M. Tachi, "Regional income disparity and internal migration of population in Japan", *Economic Development and Cultural Change*, January 1964.

and rural areas reinforced each other to motivate people to shift from rural to urban areas, particularly during the postwar period of rapid economic growth.

It should be noted, however, that net migration volumes in the 13 regions shown in table 1 suggest newly emerging trends of migration flow, particularly during the latest quinquennial period of 1965-1970.

Table 1. Net migration in thirteen regions in Japan,
1920-1925 to 1960-1965
(in thousands)

Region	1920- 1925	1925- 1930	1930- 1935	1935- 1940	1947- 1950	1950- 1955	1955- 1960	1960- 1965	1965- 1970
1. Hokkaido	-110	+ 49	-24	-56	+116	+ 44	-50	-177	-282
2. Tohoku	-145	-190	-238	-404	-167	-474	-584	-677	-451
3. Kita-Kanto	-93	-109	-137	-142	-246	-336	-344	-178	-32
4. Minami-Kanto	+605	+619	+619	+751	+902	+1,472	+1,580	+1,917	+1,356
5. Hokuriku and Tosan	-192	-182	-300	-281	-317	-496	-421	-397	-322
6. Tokai	+31	-28	+ 8	-17	-54	+ 36	+109	+252	+159
7. Keihanshin	+456	+434	+778	+453	+395	+618	+732	+948	+515
8. Others (Kinki)	-45	-41	-35	-94	-121	-107	-109	-21	+38
9. Sanin	-32	-26	-55	-61	-54	-62	-117	-128	-88
10. Sanyo	-47	-68	-18	-0	-106	-136	-212	-184	-44
11. Shikoku	-91	-92	-177	-197	-111	-237	-297	-278	-183
12. Kita-Kyushu	-89	+ 0	+35	+104	+30	-130	-347	-642	-411
Minami-Kyushu	-76	-59	-150	-249	-129	-254	-431	-460	-375

Source: Population censuses and vital statistics.

Note: Net migration in the 46 prefectures was estimated for a five-year period (except for 1947-1950) by subtracting the natural increase obtained from vital statistics from the net increase in each prefecture derived from census populations. These were then grouped into the 13 regions. Minami-Kanto, usually called "Tokyo metropolitan area", comprises Tokyo metropolis and the surrounding three prefectures; Keihanshin, the second largest metropolitan area, comprises Osaka, Kyoto and Hyogo prefectures; Tokai, usually called "Chukyo metropolitan area", Aichi, Mie, Gifu and Shizuoka prefectures.

Migratory movement of population in Japan started to increase sharply around 1955 when rapid economic growth began, following the economic reconstruction stage in the immediate postwar period. Gross migration volumes in Japan as a whole are shown in table 2. 5/ The average number of migrants per

5/ Migrants are defined as persons who changed municipalities of domicile (i.e. shi, machi, and mura-minor civil divisions) to other municipalities. People who changed their domiciles within the boundary of their municipalities are not included as migrants.

year continued to increase, from about 5.2 million in the second half of the 1950s to about 6.5 million in the first half of the 1960s, and again to 7.6 million in the second half of the 1960s. Furthermore, it exceeded 8 million for the first time in 1969 and 1970. The gross migration rate also reached 8 per cent in the last two years. It is very clear that gross migration has maintained an increasing trend. It should be noted, however, that figures of gross migration are the sums of two opposite streams of migration, namely in-migration and out-migration. Consequently, trends of migration volume do not necessarily reflect changes in the direction of migration. The accelerated trend of gross migration shown in table 2 indicates that the number of migrants as a whole is increasing, but it does not tell anything about the changes in each component. For example, trends of in- and out-migration in the three large metropolitan areas (Tokyo, Keihanshin and Chukyo)^{6/} indicate that the changes in the volumes of in- and out-migration are roughly proportional, in spite of the continuous increase of gross migration volume (sum of in- and out-migration). The percentage of in-migrants into the three metropolitan areas of the gross migration was highest in 1961, 67.0 per cent, and then started to decline, reaching 57.4 per cent in 1970. It clearly shows a continuous increase of out-migrants from the three metropolitan areas to other local regions. The trend of gross migration does not reveal any structural change of migration, which has to be taken seriously into consideration in formulating national development planning because it may reflect an attitudinal change on the part of people in selecting a place of residence.

Table 2. Nation-wide population migration
(in thousands)

Year	Total migration	Percentage of total population
1955	5,141	5.8
1956	4,860	5.4
1957	5,268	5.8
1958	5,294	5.8
1959	5,358	5.8
1960	5,653	6.1
1961	6,012	6.4
1962	6,580	7.0
1963	6,937	7.3
1964	7,257	7.5
1965	7,381	7.5
1966	7,432	7.5
1967	7,480	7.5
1968	7,775	7.7
1969	8,126	8.0
1970	8,273	8.0

Source: Bureau of Statistics, Office of the Prime Minister, Annual Report.

^{6/} The Tokyo metropolitan area comprises Tokyo metropolis and three surrounding prefectures; Keihanshin comprises Osaka, Kyoto and Hyogo prefectures; and Chukyo comprises Aichi, Mie and Gifu prefectures, but not Shizuoka prefecture.

Regional distribution of population is affected not only by internal migration but also by natural increase. However, migration played a much more dominant role than natural increase in redistributing population in the postwar period in Japan. The traditionally high regional disparity in fertility and mortality ^{7/} among regions, by prefecture, converged rapidly. At the same time, a tremendous shift of population took place, particularly between less industrialized and more industrialized prefectures. A few indicators may be enough to show the drastic changes of regional populations. During the five year period, 1960-1965, 25 out of 46 prefectures lost population; between 1965 and 1970, 20 prefectures declined. Of all minor civil divisions, 76 per cent, totalling 3,376 as of 1965, lost population in the five-year period, 1960-1965, and, again, 71 per cent of them (totalling 3,276 as of 1970) in the last intercensal period. The percentage of urban population ^{8/} continued to increase, 56.3 per cent, 63.5 per cent, 68.1 per cent and 72.2 per cent in 1955, 1960, 1965 and 1970, respectively. It is noteworthy that population concentration continued in the three large metropolitan areas, Tokyo, Keihanshin and Chukyo, which comprise 11 prefectures and are sometimes called "Tokaido megalopolis." The population in the megalopolis finally exceeded 50 million in 1970, nearly 50 per cent of the total national population in an area which represents only about 15 per cent of Japan's total land surface. While the increase in national population in the last five-year period, 1965-1970, was 5.4 million, the Tokaido megalopolis recorded a 5.4 million gain. Thus, the equivalent of the total national population increase was absorbed by the megalopolis area alone. This clearly indicates the disproportionate distribution of population, within the country, that resulted from unprecedented migratory movements.

The reversal of population dynamics ^{9/}

Since migration is usually age-selective, centring around the age group 15-29 yr. old, continuing heavy migration between rural and urban areas may bring about a gradual change in the crude birth and death rates in both areas through shifts in the population's age composition. That is, the mobile population usually consists of persons in specific age groups with high fertility and low mortality. Continuous urbanward migration from rural areas may be expected to bring about higher natural increase rates in urban areas as a result of rising birth rates and lowering death rates, and also lower natural increase rates in rural areas as a result of lowering birth rates and rising death rates. These opposite trends in population dynamics in the rural and urban areas accelerated rapidly in Japan and finally resulted in an unusual reversal of birth rates and natural increase rates in 1965, namely higher birth and natural increase rates in urban than in rural areas. Crude birth rates in the most industrialized, urbanized areas, such as Tokyo, Kanagawa, Saitama, Chiba prefectures (actually constituting the Tokyo metropolitan area), Aichi prefecture (central place of the Chukyo metropolitan area), and Osaka prefecture (central place of the Keihanshin metropolitan area), became higher (all of them higher than 20 per thousand) than

^{7/} Regional disparity by prefecture, expressed by variation coefficient of net reproduction rate, shrank remarkably, from 12.7 per cent average value for the period 1955-1959, to 7.4 per cent for 1960-1964.

^{8/} Urban population is defined as population residing in cities administratively called *shi* and having populations of more than 30,000 inhabitants.

^{9/} T. Kuroda, *Nihon-Jinko no Bunseki*, ("Analysis of Japanese population"), pp. 219-242.

those of all rural and the more agricultural prefectures (40 prefectures). Crude death rates, of course, are much lower in the urbanized areas than in the rural, agricultural areas. For example, they are around 5 per thousand in the former areas, against 7-10 per thousand in the latter. Consequently, the natural increase rates are considerably higher in highly urbanized prefectures (for example, 1.8 per cent in Kanagawa and Saitama prefectures in 1970) and much lower in local prefectures. In the Shimane and Tottori prefectures, which are typical areas of the sources of the population exodus, natural increase rates were only around 0.4 per cent in 1970, or less than one quarter of those in Kanagawa and Saitama prefectures. Table 3 shows the recent vital rates in selected urban and rural prefectures.

As far as the reproduction rate is concerned, it is only slightly higher in local prefectures. So, the reversal of crude birth rate is caused exclusively by the high proportion of young adults in the population of the urban prefectures and the low proportion of young adults in the population of the rural prefectures,

Table 3. Vital rates in selected prefectures in Japan

Prefecture	Crude birth rate			Crude death rate			Natural increase rate		
	1965	1968	1970	1965	1968	1970	1965	1968	1970
Urban									
Tokyo	20.7	20.4	16.0	15.7	15.2	20.2	4.8	4.7	4.9
Kanagawa	22.0	22.5	16.8	17.7	18.3	23.1	5.1	4.8	4.8
Saitama	22.1	22.9	15.4	16.9	18.0	23.7	6.7	6.0	5.7
Chiba	20.0	20.8	12.7	14.2	15.5	21.8	7.3	6.6	6.3
Aichi	21.2	21.6	15.2	15.9	16.0	21.7	6.0	5.7	5.7
Osaka	22.1	22.7	16.6	17.3	17.4	22.8	5.5	5.4	5.4
Rural									
Shimane	14.4	13.9	4.4	4.2	3.5	13.6	10.0	9.7	10.1
Tottori	14.8	14.1	5.6	5.2	4.9	14.0	9.2	8.9	9.1
Kochi	14.8	14.2	5.0	4.3	4.2	15.0	9.8	9.9	10.8
Kagoshima	15.8	14.7	7.0	5.7	4.6	14.0	8.8	9.0	9.4
Tokushima	15.5	14.6	5.8	5.3	5.4	15.0	9.7	9.3	9.5
Yamagata	14.9	14.1	6.4	6.1	5.6	14.0	8.5	8.0	8.4

Source: Vital Statistics, Ministry of Health and Welfare.

Note : The birth rate is lowering slightly in Tokyo, and rising slightly in Kanagawa, Saitama and Chiba prefectures. It should be noted that rapid suburbanization of population in the latter prefectures, caused by heavy outmigration from Tokyo to these surrounding prefectures, is the basic reason for such a change in birth rates in both the central and suburban areas. The majority of out-migrants are young couples and commuters to Tokyo.

brought about by population transfers. ^{10/} It is notable, however, that, as a result of this unprecedented reversal, the population reproductivity of the actual population in terms of the natural increase rate has become higher in urban than in rural prefectures. This is a new pattern of regional reproduction of population which should be kept in mind in evaluating the ecological implications of rural and urban population change.

Another reversal should be mentioned. No prefectures have shown negative values of the natural increase rate so far, even though some local prefectures have a very small margin of natural increase. If we look into the vital rates of minor civil divisions, some of them have started to record a negative natural increase, i.e. more deaths than births, since around 1962. These are, of course, towns and villages with small populations in which heavy out-migration tends to affect the vital rates rather quickly. Some 200 towns and villages, about 6 per cent of the total number of civil minor divisions, have reached this situation of negative rate of natural increase since around 1965 and have declining population even though out-migration has stopped. Even more important is the fact that about 30 per cent of all the minor civil divisions (1,020 out of 3,376 as of 1965) show very low levels of natural increase rates, ^{11/} which might turn into a negative rate in the near future if present trends continue. How heavy the migratory movement in Japan was can be seen indirectly by its demographic effects on rural and urban population in general terms. An unusual transformation of patterns of population reproduction in rural and urban in turn suggests serious ecological implications in both areas.

Ecological implications of population distribution

Migration is a major mechanism whereby many individuals attempt to work out a better adjustment between themselves and their physical and social environment. It has been argued by many authors that the role of migration in maintaining a balance between population and resources is illustrated by the rural-to-urban movement of population. However, the balancing function of migration between population and resources is not simple. Rural-to-urban movement does not necessarily mean better adjustment, and is also not limitless in the practical sense.

If a rural exodus of population should be excessive, it may have an adverse effect on both the sending and the receiving places, namely rural and the urban areas. Japan's experience is a case in point. The author proposed a hypothesis on the eventual equalization of regional distribution of population on the basis of recent experience in migratory behaviour of the Japanese population. ^{12/} If regional distribution of population on the limited land surface were to be extremely imbalanced, some new movement of population to restore more or less

^{10/} Standardized birth and death-rates in local prefectures showing an extremely low rate of natural increase are not significantly different from those of the national population. *Ibid.*, pp. 220-221.

^{11/} *Ibid.*, p. 226.

^{12/} T. Kuroda, "Jinko chiikibumpu kinkoka-undo no kasettsu to jinko-ido", ("Equalizing movement of regional distribution, of population and migration: a hypothesis"), *Jinko Mondai Kenkyusho Nempo* ("Annual reports of the Institute of Population Problems), No. 14, 1969, pp. 33-36.

the normal distribution of population on the land could be expected. Definition of balanced or normal distribution of population is not absolute, but relative and dynamic, varying greatly, intertemporally and interspatially. Consequently, the elaborate measurements related to a balanced distribution of population on a particular land surface are theoretically instructive, but not necessarily practical.

Emerging incipient facts that social scientists should always be sensitive to and aware of do tell something new. Heavy concentration of population and industries in some limited areas, such as the three large metropolitan areas of Japan, started to create new urban problems, such as physical, economic and cultural disadvantages caused by traffic congestion, long-distance commuting, inadequate housing and environmental disruption through air and water pollution, and noise. Tremendous and rapid concentration of population in the giant cities and their suburban areas greatly exceeded the capacity of public authorities to provide basic infrastructural facilities commensurate with the volume of population increase. The advantages of external economies decreased to a great extent for the private industrial sector. Indeed, it is increasingly difficult for private enterprises to expand their activities within a great city, and even in the suburban areas, because of the soaring price of land, the difficulty of recruiting labour, and strong opposition from citizens to the location of factories in the residential areas.

Instead, increasing attention is being paid to the far less densely inhabited, depopulated areas, particularly since 1967 when the new name of "kaso" (excessively sparse) was applied to those areas by the Economic Deliberation Council. The Council pointed out that, in areas where depopulation is heavy, a certain level of living may be difficult to maintain, such as basic facilities in communities for education, health care and prevention of disaster. Furthermore, the regional productive function may be drastically reduced. 13/

The concern for "kaso" areas is based mainly on the recognition that rapid out-migration of the young adult population from rural communities is continuing, resulting in a higher percentage of old population. Ecological implications of rapid depopulation in rural communities manifest themselves in both personal and public dimensions which are inseparably associated. Average income per family may be reduced as a result of the decrease in the number of working members. Resource utilization also becomes inefficient. For example, the cultivation of land tends to be expensive, and is sometimes abandoned, because of labour shortage and relatively low productivity. Young adults move out permanently or seasonally. On the other hand, the financial difficulties of local governments due to heavy exodus of population are increasing. Integration of educational facilities within the community, the difficulty of maintaining fire-fighting services and adequate levels of public health activities and clinical services are major issues.

There are serious implications of air pollution, water pollution, traffic

13/ *Keizai Shingikai Chiikibukai Hokoku*, ("Report of the Regional Working Party of the Economic Deliberation Council"), edited by the Over-all Development Bureau of the Economic Planning Agency, 1967.

congestion, inadequate housing, and noise in the great urban areas. On the other hand, problems of maintaining social, economic and cultural functions are being aggravated in rural depopulated areas. Taking into account the urgency of ensuring the people's health and welfare and the necessity of using rationally the extremely limited land surface, a new comprehensive environmental development 14/ must be devised.

New dimensions of migratory behaviour

As mentioned earlier, a specifically directed movement of population, namely rural-to-urban, cannot be indefinitely maintained, theoretically or in practice. Rural areas do not have limitless surplus populations that can be pushed out.

There must be limits not only to the sending out of populations from rural areas but also to their being received in urban areas. Complaints about shortage of labour in rural areas have been voiced recently. Urban prefectural authorities are having serious difficulties in coping with rapid population increase. Theoretically, it cannot be argued that metropolitan areas in which natural increase rates rise substantially, and are already much higher than those in rural areas, can continue to absorb population. Otherwise, large metropolitan areas will quickly exceed their physical capacity for supporting population because of dual factors — their high natural increase rates and in-migration; rural areas may exhaust their populations quickly because of the factors of low or negative natural increase rates and out-migration.

Actually, there is some evidence to suggest that a transformation is taking place in migratory behaviour and distribution of population.

Table 1 shows that, on the one hand, the net in-migration in the large metropolitan areas started to show a significant decrease in the latest intercensal period, 1965-1970, after past remarkable increases, and, on the other, that the net out-migration in the remaining local regions had begun to shrink somewhat earlier. Net out-migration from Kita-Kanto, Kinki, Sanyo, and Shikoku started to shrink as early as 1960, but that from Tohoku, Sanin and Kyushu started five years later. The shrinkage was particularly remarkable in the cases of Kita-Kanto, Kinki and Sanyo. Kinki, surrounding Keihanshin metropolitan area, finally shifted from a net out-migration into a net in-migration area in the latest intercensal period, 1965-1970. Net out-migration was greatly reduced, becoming, in the latest five-year period, less than one-tenth of that ten years earlier in Kita-Kanto and less than one-fifth in the same period in Sanyo. The most recent trends in net migration can be obtained from migration statistics based on information from the Basic Resident Registers which show annual changes.

Table 4 shows the net migration picture between major local regions and the three largest metropolitan areas combined. Changing trends in net migration are more pronounced in the annual statistics.

^{14/} "Planning and management of human settlements for environmental quality," Report by the Secretary-General, United Nations Conference on the Human Environment, Stockholm, June 1972 (A/CONF. 48/6.), p. 3.

Table 4. Net migration between local regions and the three largest metropolitan areas combined
(in thousands)

Year	Tohoku	Hokuriku	Tosan	Chugoku	Shikoku	Kyushu	Kita-Kanto
1960	-110	-50	-35	-65	-57	-170	-57
1961	-125	-52	-33	-71	-59	-207	-51
1962	-130	-55	-32	-71	-57	-204	-47
1963	-119	-52	-29	-70	-50	-202	-48
1964	-114	-48	-26	-62	-48	-194	-43
1965	-104	-45	-25	-49	-40	-134	-40
1966	-89	-43	-24	-40	-38	-103	-39
1967	-85	-41	-21	-38	-35	-124	-25
1968	-84	-42	-20	-36	-35	-145	-19
1969	-87	-39	-19	-35	-37	-165	-3
1970	-88	-35	-16	-30	-32	-159	+ 2

Source: Bureau of Statistics, Office of the Prime Minister, *Annual Report on Internal Migration in Japan Derived from the Basic Resident Registers*.

Note: The migration statistics originally shown by prefectures have been re-calculated and grouped into regions.

In particular, it should be noted that net out-migration from the Kita-Kanto region has been rapidly decreasing and, in 1970, the trend finally became net in-migration. It seems clear that a fundamental change in migration streams is under way. That is, an increasing trend of so-called return migration at a rate higher than that of rural exodus has started, resulting in a shrinkage of net out-migration in rural regions. Already, there is even net in-migration in some regions, such as Kinki and Kita-Kanto, which are just outside the great metropolitan areas. Other regions that are still showing net out-migration may be expected to have evenly balanced out- and in-migration in the future, depending on the particular situations in each region. It can be suggested that the trend of increasing return migration is an indication of the type of current redistributive movement of population in Japan.

This redistributive movement of population is achieved not only by increased return migration, but also by other various patterns of migration. Inter- and intra-metropolitan migration, as well as intraprefectural migration, are rapidly increasing. In sum, shifting from a one-way movement of population, namely rural-to-urban type, to a multi-way movement is characteristic of the new stage of economic and social change.

The latest population census taken in 1970 provides us with other information concerning population distribution by communities and the effect of migration on distribution. Firstly, the fastest growth rates for urban entities were registered

by medium-sized cities with populations of between 200,000 and 299,000 inhabitants, followed by those with population of 100,000 to 199,000. (see table 5).

Table 5. Urban population increase by city size

Size of city (thousands)	Total population		Increase (thousands)	1965-1970 (percentage)	1960-1965 (percentage)
	1970 (thousands)	1965 (thousands)			
Total Urban	74,838	68,863	5,975	8.7	9.9
+ 1,000	20,847	20,219	628	3.1	9.1
500-999	4,562	4,000	562	14.0	24.6
400-499	3,003	2,673	330	12.4	10.8
300-399	4,886	4,303	583	13.5	13.9
200-299	9,800	8,337	1,464	17.6	14.6
100-199	10,415	9,059	1,356	15.0	16.9
50- 99	11,953	10,801	1,153	10.7	7.8
- 50	9,372	9,471	-99	-1.0	-1.7

Source: 1970 National Census.

It is noteworthy, in particular, that such medium- and smaller-sized cities gained population even in regions and prefectures which were losing as a whole. This would indicate that population concentration, which was for a long time focused toward national-level clustering, as in the Tokaido megalopolis region, is now moving toward regional- or local-level clustering. We call it "dispersed concentration". Secondly, population increase rates in the largest metropolitan areas were lowest in the latest five-year period, 1965-1970, as compared with previous quinquennial periods after the war. Their populations are still increasing. However, this is due mostly to the increasing role of natural increase in contrast with the decreasing contribution of in-migration to the population increase. The largest cities, Tokyo (23-ward area) and Osaka, which are the central cores of their metropolitan areas have stopped growing, and other independent major metropolises, such as Nagoya, Kyoto and Kobe, show sharply declining rates of growth. An exception is Yokohama which is maintaining a high rate of increase. Thirdly, during the period 1965-1970, 20 prefectures lost population, as opposed to 25 in the 1960-1965 period, and almost all of these have a smaller rate of decrease in the last five years than in the preceding period. The foregoing facts would suggest a turning point of the distributive movement of population on the limited land of Japan.

Policies and programmes

All too much attention has been given to the role of migration in the increases in urban population, overlooking the dynamics underlying the total process and particularly ignoring multiway movement; including urban to rural return migration, and the demographic effects of migration on vital events in both areas of origin and of destination. It must be fully recognized that migration is only one of several mechanisms by means of which people attempt to adjust to the changing environmental conditions, physical and economic. For any

policy on redistribution of population to be formulated, due consideration should be given to social, economic and physical conditions. At an earlier stage, regional economic disparities seemed to have played a dominant role in the heavy rural-to-urban migration. So, government policy was focused on the correction of regional economic differences. However, recently accelerating environmental degradation in the large metropolitan areas has become an influential factor motivating urban people to move out, coupled with growing employment opportunities in local areas. New policies and programmes are seriously under consideration. Some of them have already been initiated. The fundamental idea is to solve problems simultaneously in the "kamitsu" (excessively overpopulated and "kaso" sparsely inhabited) areas by redistributing population and industries. The new project was proposed by Prime Minister Tanaka whose idea is developed in his book entitled *Nippon Retto Kaizoron* (National Land Reform Project) published in June 1972. This paper cannot review or evaluate all of the suggestions made by the various ministries of the Japanese Government. However, it might be added that, in view of the big differences in social and cultural facilities among different sizes of urban places, a policy to give the population even in the small cities access to a number of basic amenities comparable with those in large cities is urgently needed, particularly to induce return migrants to settle down in these smaller cities and to persuade people born there to remain.

Return migration is clearly recognized in the last ten years or so in Japan, but information about it is still scarce. It is not sufficiently known who the return migrants are and why they have returned. Comprehensive and intensive surveys with respect to return migrants are greatly needed. It is interesting to note that several surveys carried out recently by the Institute of Population Problems suggest that return migrants have much higher educational attainment and social status than non-migrants and other types of migrants. ^{15/} If this is true, they may not be people who failed in the large metropolitan areas. With their experience in urban life and occupation, they can serve as agents of change and development in smaller cities and rural areas. "By building bridges between urban and rural places the migrant should be a major instrument of change, provided, of course, that the other resources essential for both urban and rural development become available". ^{16/}

The age compositions of the national and regional populations are very important elements for policy consideration, particularly where they are changing considerably or expected to change in the near future. As a result of the dramatic vital statistics revolution after the war, the age composition of the Japanese population is changing rapidly. Sharp decreases in the population of young age and remarkable increases in those of higher ages are under way. In addition the age composition of regional populations, in rural and urban areas, are considerably affected by heavy migration. The disproportionately high number of young adults in urban areas, and the far higher proportion of aged population in rural areas are basic considerations in formulating develop-

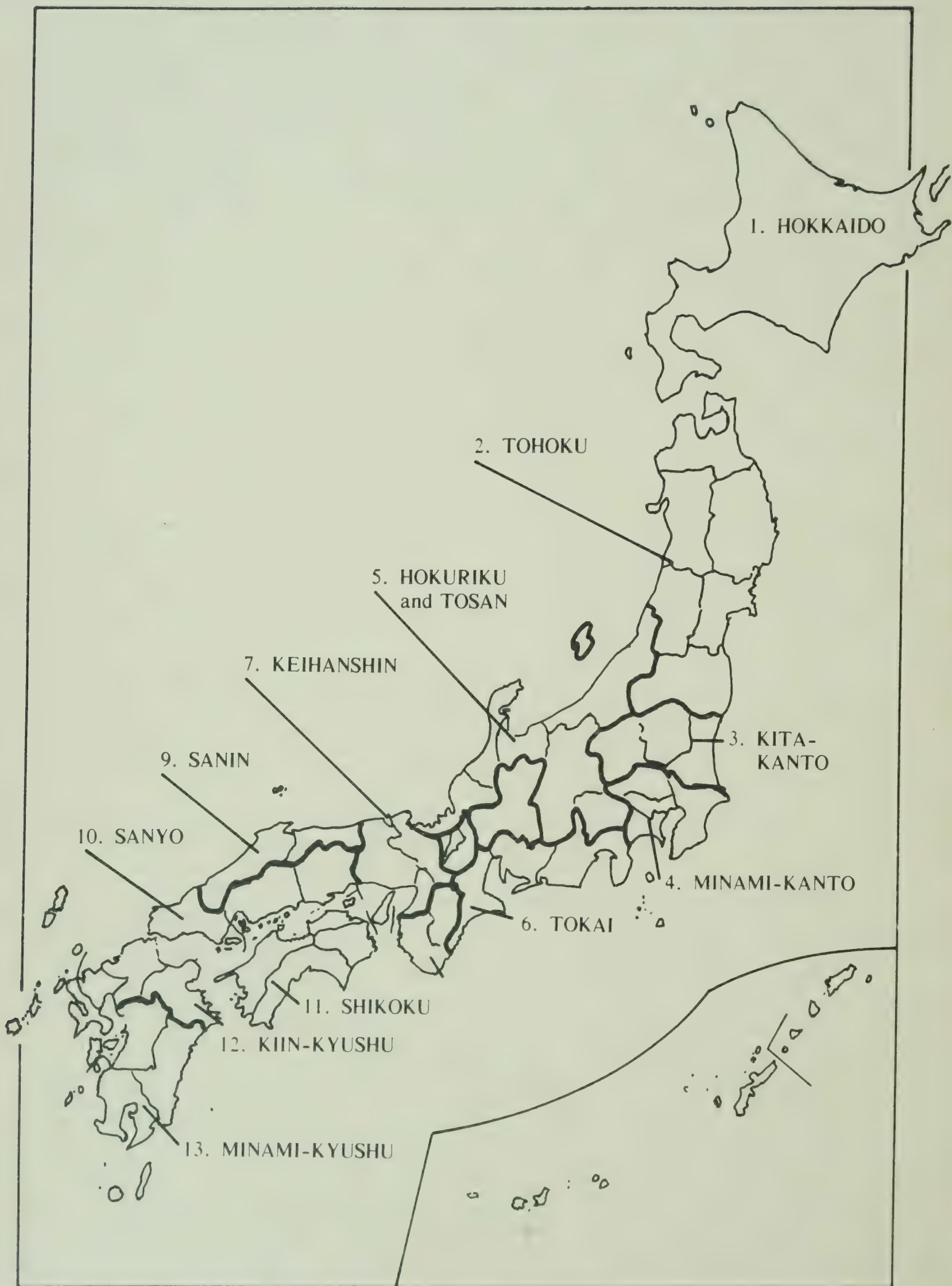
^{15/} Institute of Population Problems, Ministry of Health and Welfare, *Jinko no Bunpu-Hendo to Chiiki-Keizai to no Kankei ni kansuru Chosa-Hokoku*, ("The 1970 survey report on the relations between population change and regional economy"), pp. 89-90.

^{16/} S. Goldstein, *op. cit.*, p. 60.

ment policy in both areas. The generally reversed levels of vital rates in urban and rural areas should also be given adequate attention.

Detailed information about migration is very limited everywhere in the world. Factual information about the interrelations between migration and environment is even more deficient. The limited information available in the case of Japan clearly points to the serious effects of migration and distribution of population on people's welfare in both rural and urban areas. The need for research and study to document these more carefully and to take them into account in developing policies and programmes should be emphasized.

Map of Japan, by region



ENVIRONMENT AND POPULATION: SOME ECOLOGICAL AND DEMOGRAPHIC IMPLICATIONS FOR DEVELOPMENT PLANNING IN ASIA*

by

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The growing concern for the quality of life and the human environment has introduced a new dimension into demographic analysis and development planning. The recent United Nations Conference on the Human Environment (June 1972) (hereinafter referred to as UNCHE) has not only revealed the magnitude of the environmental problems facing developed as well as developing countries, but has also raised hopes for a better future for mankind, as indicated in the action plan for the human environment.^{1/}

The relationship between population growth and the degradation of human environment is a controversial subject. It is not necessary to go into the debate for the purpose of this paper, which is primarily concerned with the problems arising out of accelerated growth of population and the increasing pace of urbanization in Asia in the last decade, and the relevant issues and questions for the coming decades. But since the focus of the Second Asian Population Conference is on policy and directions for action relevant to planning, implementation and evaluation, it is important to present briefly the viewpoint of some of the developing countries on the subject of environment and population.

At the Stockholm Conference, the population question was hotly debated and the discussions were full of sharp controversies, somewhat similar to the age-old controversies between Malthusians and Marxians. The United Nations statement on population in the Declaration on the Human Environment made the following somewhat guarded recommendation:

"Demographic policies, which are without prejudice to basic human rights and which are deemed appropriate by Governments concerned, should be applied in those regions where the rate of population growth or excessive population concentrations are likely to have adverse effects on the environment or development, or where low population density may prevent improvement of the human environment and impede development."^{2/}

This was interpreted by some observers as side-stepping the population issue, while it provoked a strong criticism in some other circles. For example, the delegate of China maintained: "Our Government has always approved of family planning. But it is wholly groundless to think that population growth in itself will bring about pollution and damage to the environment and give rise to poverty and backwardness."^{3/}

* The opinions expressed in this paper are the author's own and do not necessarily reflect the views of his organization or those of the ECAFE secretariat or of the United Nations.

^{1/} "An Action Plan for the Human Environment," UNCHE (A/CONF.48/5).

^{2/} Quoted in *International Planned Parenthood News*, No. 220, August 1972.

^{3/} *Ibid.*

The Prime Minister of India in her address to the Conference said that poverty was the greatest polluter and asserted that:

"It is an over-simplification to blame all the world's problem on increasing population. Countries with but a small fraction of the world's population consume the bulk of the world's production of minerals, fossil fuels and so on. Thus we see that when it comes to the depletion of natural resources and environmental pollution, the increase of one inhabitant in an affluent country, at his level of living, is equivalent to an increase of many Asians, Africans or Latin Americans at their current material levels of living."^{4/}

Carmen A Miro, a distinguished Latin American demographer observed:

"Appealing to the need for population control as a means of environment conservation without accompanying it with an equally strong plea for drastic measures to change the social and economic conditions which have made possible its massive destruction, depletion and deterioration could evoke suspicions that the less fortunate inhabitants of this planet are being confronted with a new Malthusian argument."^{5/}

We have referred to the viewpoints of the leaders of China, India and Latin America in order to demonstrate the danger of over-emphasizing the impact of environmental factors on developing countries where the basic problem is lack of development. However, it would be futile to argue that the developing countries are not faced with environmental problems. In fact, they are faced with two types of problem: the problems of a dual economy and the problems of underdevelopment. Most of these countries have a small modern industrial sector, which, with extended programmes for rapid industrialization, is bound to grow. The problems of environmental pollution faced by this sector are similar to those faced by industrial countries in the West and by Japan in Asia. Then there is another set of problems of environment arising out of poverty, such as the absence of pure drinking-water and environmental sanitation. This set of problems has been neatly summed up by Gamani Corea of Sri Lanka as follows:

"Ours are the problems of a poor society: the problems of bad water, poor housing, disease and sickness, lack of sanitation and sewage facilities, inadequacy of nutrition. They have not arisen from an excessive degree of development; rather, they reflect the inadequacy of development so that, while the rich countries may look upon development as the cause of environmental destruction, the poor countries cannot but look upon development as the cure and the means of remedying basic environmental problems. In this sense, therefore, the concern with environment in the developing world is but an aspect of the commitment to development. There is no inherent antagonism, no inherent conflict between the goals of environment and the goals of development."^{6/}

^{4/} Address of Mrs. Indira Gandhi to UNCHE, 14 June 1972. Reproduced in Government of India, Office of Environmental Planning and Co-ordination Agenda Notes for the Second meeting of the *National Committee on Environmental Planning and Co-ordination*, Vol. 1, July 1972, p. 4.

^{5/} *International Planned Parenthood News*, *op. cit.*

^{6/} "Report of the regional seminar on the ecological implications of rural and urban population growth", (E/CN.11/L.312), p. 55.

It may be recalled that Gamani Corea was associated with the panel of experts who prepared a report (now known as the Founex Report) on "Development and Environment" in June 1971. This report rightly points out that in the developing countries, it is not merely that the "quality of life" is endangered but "life itself is endangered by poor water, housing, sanitation and nutrition, by sickness and disease and by natural disasters. These are problems no less than those of industrial pollution, that clamour for attention in the context of the concern with human environment. They are problems which affect the greater mass of mankind."^{7/}

Environmental problems, with specific reference to the Asian countries, were considered at a seminar convened by ECAFE in August 1971. The Founex report was used as a basic document for the seminar which generally endorsed the approach of the Founex report and asserted that the developing countries of Asia could benefit by the experience of Japan which had known "unprecedentedly rapid economic growth in recent years and which, for that very reason, had also had to face severe problems of environmental disruption and degradation... The developing countries had an opportunity of attaining a better pattern of future development that had been achieved by the countries that had already industrialized."^{8/}

Environmental problems, with specific reference to the ecological implications of rural and urban population growth in the ECAFE region, were further discussed in a subsequent seminar convened by ECAFE in August-September 1971. The seminar observed that "from a consideration of the interrelation of all aspects of the human environment, population appeared as the key factor in understanding environmental problems."^{9/} Rapid population growth was seen as one of the contributors to disequilibrium in the ecosystem.

Until recently it was customary to discuss the demographic aspects of urbanization and to recommend policies for influencing internal migration. For example, at the First Asian Population Conference, two major themes were: "policies relating to such measures as fertility, public health and family planning on the one hand, and urbanization and internal migration on the other..."^{10/} Today, however, the emphasis is on total developmental effort. To quote the ECAFE Seminar on ecological implications:

"Recognizing that growth, distribution and migration of population may have a pervading influence on environmental deterioration, the Seminar strongly recommends that attention to the interaction between population and environment receive the highest priority at all stages of development planning and at all levels - local, regional, national and international."^{11/}

^{7/} *Development and Environment*, UNCHE, annex 1. (A/CONF. 48/10) p. 4.

^{8/} "Report of the seminar on development and environment" (E/CN.11/999), pp. 9-10.

^{9/} *Op. cit.*, footnote 6/, p.6.

^{10/} *Report of the Asian Population Conference and Selected Papers* (New Delhi, December 1963). (United Nations publication, sales No. 65. II.F.11) p. 29.

^{11/} *Op.cit.*, footnote 6/, p.41.

The Stockholm Conference made an urgent plea for treating environmental concerns as "an added dimension in planning and not merely as a further claim on limited resources," and "to formulate a new strategy of development centred on the elimination of mass poverty and on the creation of a decent human environment."^{12/}

The Second Asian Population Conference should therefore indicate the guidelines for a new development strategy which gives due consideration to the environmental variables as well as the population variables. In this context, the goals and objectives of the United Nations Second Development Decade ^{13/} must be kept in mind. Briefly these are: (a) an average annual rate of growth of at least 6 per cent per annum in the gross product of developing countries, implying a 4 per cent rate of growth in agricultural output and an 8 per cent rate of growth in manufacturing output; (b) an average annual expansion of 0.5 per cent in the ratio of gross domestic saving to the gross product, so that this ratio rises to around 20 per cent by 1980; and (c) a somewhat less than 7 per cent rise in imports and a rise somewhat higher than 7 per cent in exports per annum.

The International Development Strategy assumes that the average annual increase in population in developing countries will be 2.5 per cent, which is less than the average rate at present forecast for the 1970s. Only then would it be possible to bring about an average annual growth rate in gross product of 3.5 per cent per head, which would represent a doubling of average income per head in the course of the next two decades.

We have mentioned all this in order to guard against an excessive concern for environment in the developing countries in Asia which might sidetrack the basic goals of development in terms of a minimum level of living for the teeming millions, and also emphasize the overriding necessity for effective population control in the immediate future.

Review of the 1960s

There have been several significant developments of demographic interest in Asian countries since the First Asian Population Conference. Broadly, these are: (a) an acceleration in the rate of population growth, (b) an acceleration in the pace of urbanization, (c) a breakthrough in agriculture, ushering in the green revolution in some countries, (d) an increasing tempo of industrialization, (e) increasing unemployment, especially in urban areas, (f) the formulation of family planning programmes in most countries, with varying degrees of success in the implementation of the programme, (g) the limited success of policies aimed at restricting migration to cities and of efforts to bring about a more balanced rural and urban development, (h) greater concern for the problems of mass poverty and, in particular, for the need for land reforms and a better distribution of income and wealth, and (i) a growing realization of the need for social development to accompany economic growth and, in particular, a better appreciation of hitherto neglected topics, such as nutrition, the status of women, the role of children and youth, housing needs and social security requirements.

^{12/} UNCHE, *Development and Environment*, op.cit., p. 19.

^{13/} General Assembly resolution 2626 (XXV) entitled "International Development Strategy for the Second United Nations Development Decade", section B "Goals and objectives".

These factors are not necessarily confined to the Asian scene; by and large, they are relevant in all developing countries. For the purpose of this paper, however, we shall consider a disturbing element in regard to policies designed to slow down migration to the big cities, to bring about better dispersal of industries, to build new cities and to attain a more balanced growth of rural and urban areas. By and large, these policies have not succeeded. In India, for example, the 1971 census data reveal an increasing tempo of urbanization of the big cities in spite of the objective of dispersal of industries laid down in all the five-year plans. During 1961-1971, 63 per cent of the net increase in population of urban areas occurred in cities with a population of 100,000 and over.^{14/} Master plans of cities such as Calcutta, Bombay and Delhi have not succeeded in stemming the tide of migration. On the other hand, small towns have stagnated. New towns have proved very costly from the financial point of view and many of them "have become isolated communities and have not struck roots in their environment."^{15/} The talk of growth centres is still at the theoretical level ^{16/} and, in spite of financial and other incentives for industries to move out of big cities, "the entire gamut of economic and sociological forces governing the location of industries is still overwhelmingly in favour of large metropolitan areas."^{17/}

There are, however, a few success stories. In a recent review, it is pointed out that this decade witnessed a rapid growth of areas contiguous to the Municipal Corporation of Greater Bombay and the belt extending up to Poona.^{18/}

In 1962, the Maharashtra Government set up the Maharashtra Industrial Development Corporation (MIDC) with the dual objective of setting up (a) well-planned industrial areas on the periphery of Bombay and (b) industrial estates in backward areas of the State. In 1966, the same Government introduced an elaborate scheme of monetary incentives and industrial assistance programmes to promote industrialization outside the Bombay-Poona belt. The entire programme of such assistance is channelled through a specially created institution called the State Industrial and Investment Corporation of Maharashtra (SICOM). The policy of industrial dispersal is reflected in the fact that, in 1964, Bombay City accounted for 63 per cent of the new industrial licences in Maharashtra State, while in 1970 the share of Bombay was only 25 per cent.^{19/}

However, in countries like India, the modern manufacturing sector in urban areas is so small that it is incapable of absorbing millions of under-employed persons from the rural areas who are dependent on subsistence agriculture.

Despite the substantial increase in industrial output in the last decade, India is faced with the problem of structural stagnation, and the prospect of a significant

^{14/} Ashish Bose, "A Decade of Rapid Urbanization: 1961-71", *Studies in India's Urbanization, 1901-71*, chapter 8, (Tata McGraw Hill, New Delhi) (in press).

^{15/} K.V. Sundaram, "Towards a national urban policy in India" (mimeographed paper), Town and Country Planning Organization, Government of India, 1972, p. 21.

^{16/} See Lalit...Sen, *et. al.*, *Planning Rural Growth Centres for Integrated Area Development: A Study in Miryalguda Taluka*, National Institute of Community Development, Hyderabad, 1971.

^{17/} Ardhendu Bhattacharya I Madhav Nalapat, "A decade of industrial dispersal from Greater Bombay" (mimeographed), City and Industrial Development Corporation of Maharashtra, Bombay, March 1972, p. 10.

^{18/} *Ibid.*

^{19/} *Ibid.*, p. 2.

transfer of population from the agricultural to the non-agricultural sector is far from bright. Nevertheless, migration from rural to urban areas continues, bringing about a demographic expansion of the big cities without a matching economic expansion or development of the urban infrastructure. This strains the urban system and leads to increasing environmental disruption and degradation. At the same time, the lack of rapid rural development adds to the problems of environment in the rural areas.

Issues and questions of the 1970s and 1980s

The statistical dimensions of the problems facing the ESCAP region in the 1970s and 1980s have been indicated in a recent ESCAP working paper.^{20/} Here we shall be concerned with certain issues rather than with a statistical picture of the coming decades. Briefly, the main issues in the context of environment are in respect of the following:

- (1) population growth;
- (2) the problems of modernization of agriculture and rural development;
- (3) the problems created by industrialization; and
- (4) urbanization.

A striking feature of the demographic situation in the ESCAP region is that the total population, which was about 2,000 million in 1970, is likely to be around 3,600 million by the year 2000; that is to say, roughly equal to the world population of 1970. Another important aspect is that 75-80 per cent of the population of the Asian region is in the rural areas and the proportion is expected to drop to 68-70 per cent by 1985. This would imply an absolute increase in rural population of the order of 370 million-400 million.

The growth of the urban population in the coming decades in the Asian countries of the ESCAP region is expected to be high, it being estimated that, in 2000, such population will be over seven times that of 1950. Meanwhile, 11 of the world's 25 largest cities are in Asian countries of the ESCAP region.

The increasing pressure of population in both rural areas and urban areas will no doubt further degrade the environment unless effective measures are taken to bring down the fertility level. However, it must not be forgotten that in countries where roughly 70 per cent of the population is dependent on agriculture and where about half of the national product is generated in the agricultural sector, the quest for a better environment must begin with a substantial increase in the productivity of agriculture. Furthermore, as long as agriculture is heavily dependent on rainfall, the erratic occurrence of drought and floods probably brings about much greater environmental degradation than that resulting from a "secular" growth of population, however rapid it may be.

^{20/} "Growth and distribution of the rural and urban population of the ECAFE region" (mimeographed) (POP/Sem. ERUP/BP/2).

The "green revolution" in countries such as India, Pakistan and the Philippines has raised high hopes of rapid strides in the modernization of agriculture and the resulting improvement in the level of living of the rural masses. In 1970s and 1980s, one of the important issues will be the impact of the "green revolution" on the mobility of labour. Will the "green revolution" reduce the flow of migration from rural to urban areas and perhaps bring about a reversal in the trend by generating urban-to-rural migration? There are not enough data to answer these questions on a firm basis. There are very few studies on the subject, although the literature on the "green revolution" is considerable. In a recent review of the material on India, T.J. Byres gives 104 references to studies on the "green revolution" in India,^{21/} but there is very little material on the impact of this phenomenon on the mobility of labour.

We may refer here to a recent OECD study which refers to the paradox of the existence of an abundant supply of agricultural labour in the less developed economies and the adoption of mechanization in agriculture. The study pleads for selective mechanization to overcome seasonal shortages without unduly displacing labour. The authors rightly observe:

"The rapid rates of increase in the labour force, the pattern of industrial development and the limited opportunities for remunerative employment outside of agricultural make it somewhat pointless to view the greater part of this surplus as a reserve of workers for non-agricultural development. The problem of withdrawing families from agriculture without thereby reducing agricultural output, thus is rarely a relevant policy issue in labour surplus economies."^{22/}

In another recent study conducted at the Institute of Economic Growth, New Delhi, on the basis of a case study of Punjab, C.H.H. Rao concludes:

"Tractorisation would have a positive impact on employment only when its complementarity with irrigation and high-yielding varieties becomes critical for expanding output. Such a situation seems to obtain at present only among large farms and in the developed regions... Since small farms are able to achieve higher cropping intensity than the larger farms without the use of tractors and since the labour-use per acre among them is much higher among large farms, measures to effect a transfer of land from the large to small farms have a high employment potential."^{23/}

Land reform is thus as much a part of modernization of agriculture as the use

^{21/} T.J. Byres, "The dialectic of India's green revolution", *South Asian Review*, vol. 5, No. 2, January 1972, pp. 111-116.

^{22/} Montague Yudelman *et. al.*, *Technological Change in Agriculture and Employment in Developing Countries*, OECD Development Centre Studies, Employment Series No. 4, Paris, 1971, p. 161.

^{23/} C.H.H. Rao, *Employment Implications of the Green Revolution and Mechanization in Agriculture in Developing Countries: A Case Study of India*, presented at an international conference on the place of agriculture in the development of underdeveloped countries, convened by the International Economic Association at Bad Godesberg, 26 August — 4 September 1972, pp. 12-13.

of high-yielding varieties of seeds, better fertilizers, assured water-supply and selective mechanization of agriculture.

Now, to turn briefly to industrialization. As we have already indicated, in spite of professed policies of decentralization and dispersal of industries, economies of scale in many developing countries favour the concentration of industries in big cities. It is futile to recommend that new industries should be established in small towns as long as it is uneconomic to do so because of such considerations as market and transport costs. The strategy of establishing new growth poles, which act as links between the big cities and the rural hinterland and avoid the adverse effects of city-based industrialization, has no doubt considerable merit, but there are several problems in the actual implementation of such a policy. The existing infrastructure in small towns is so poor that unless massive investments are made, the small towns cannot really serve as growth centres. The other alternative is to build new towns, but this calls for even more massive investments. The result is that industries spread along the transport network, and this leads to "ribbon" development and a haphazard urban sprawl. This, in turn, causes serious problems of environmental disruption, especially in the unplanned industrial-urban belts which have the disadvantages of both rural and urban areas. Sometimes whole villages are swallowed up by urban sprawl and these rural pockets in urban areas become major centres of environmental pollution, unhygienic conditions, substandard housing, crime and violence. The problem is further accentuated by land speculation, ineffective municipal control of areas beyond the municipal limits and, very often, political nepotism and corruption. This problem of rural pockets in urban areas is not the same as the problem of industrial slums, which is basically a problem of unregulated human settlement and the arbitrary conversion of agricultural land into industrial and residential land. Unless adequate steps are taken to meet this situation, the environmental problems will further multiply.

Finally, there is urbanization. In many big cities of Asia, perhaps the biggest threat to environment comes from the squatter problem. The increasing influx of migrants, an acute housing shortage, the high cost of house construction and high rental values have all contributed to this problem. Big cities in India, such as Calcutta, Bombay and New Delhi, have been fighting the squatter problem unsuccessfully. Furthermore, on account of luxury housing and the emergence of skyscrapers in these cities, the disparity in the housing standards of the rich and the poor is increasing. Then there is the problem of pavement-dwellers, whose plight is worse than that of the squatters. All these pose a threat not only to environment but to law and order and even political stability. In such a situation, talk of the quality of life can only refer to the elite and not to the masses.

Regarding the problem of increasing unemployment, especially among educated youth in the urban areas, this has generated several types of conflicts and tensions: the conflict between the "sons of the soil" and the "outsiders" — the migrants, the clamour for jobs and the outbreaks of violence.

The inadequacies of the public transport system are very often the cause of violence in Indian cities, the anger of the masses being expressed in the burning of public buses. While western cities are getting polluted by too many cars, Indian cities are facing disruption on account of too few public buses,

and the talk of air pollution sounds unreal to the city-dwellers in India. But the problem of air pollution does exist and is increasing. As a recent study of air pollution in nine big cities of India concludes: "Air pollution which once seemed so remote, is no longer so and isolated pockets of fairly severe pollution are to be found all over the country."^{24/}

Increasing industrialization and urbanization pose new problems of environment, but the old problems continue to be severe. From this point of view, developing countries are facing a dual hardship in environmental deterioration.

Identification of information gaps

In order to understand the interrelation between population and environment in the developing countries, it will be necessary to strengthen the statistical system and collect considerable additional data on both population and environment. It will be necessary also to make fuller use of available data through intensive tabulation schemes for the census and sample surveys, but this calls for at least minimum facilities for computerization of such data. The need for scientific sample surveys in various fields is apparent; this is especially true of studies on pollution, on which hardly any data exist in developing countries.

UNCHE has recommended the following priority areas for collection of basic information: surveys of the present state of the environment and the hazards to which it is likely to be exposed; and studies and surveys to determine the extent to which the environment is affected by mass poverty, malnutrition, housing shortage, inadequate water-supply, disease and illiteracy. UNCHE has also recommended reviews of existing legislation available to implement national environmental policies and objectives, with a view to determining new legislative actions, and also analytical studies of other countries which are developing environmental programmes and policies.^{25/}

The ECAFE Seminar on the ecological implications of rural and urban population growth emphasized the need for adequate data for the assessment of the relation between population and environment and for the evaluation of the success of various "curative and preventive policies." The Seminar recommended that concerted efforts should be made to provide separate data on the urban and rural populations and on cities of different sizes and to collect "information on migration which will permit assessment of who moves, why, from and to where, and what impact such movement has on the migrant and on his community of origin and destination."^{26/} The Seminar also highlighted the need for improving population projections, since environmental planning requires good estimates of the future size and rural-urban distribution of population.

The cost of data collection is an important consideration in developing countries, which have limited resources and in which budgetary allocations for research are generally scanty. In some quarters the view prevails that research

^{24/} S.J. Arceivala, "Environmental problems in India" (mimeographed), Central Public Health Engineering Research Institute, Nagpur, 1971, p. 54.

^{25/} UNCHE, *Development and Environment*, *op. cit.*, p. 10.

^{26/} *Ibid.*, p. 41.

in a poor country is a luxury, and bureaucrats often tend to regard with suspicion evaluation studies which imply a criticism of governmental policies. The administration of research grants is often based on outmoded colonial practices, with the overriding authority resting with the Ministry of Finance. In these circumstances research cannot develop on sound lines.

We submit that instead of merely listing items of additional data collection and identifying research gaps, the Second Asian Population Conference should make firm recommendations bearing in mind the following:

- (1) The need for evolving a set of indicators for social and economic development in Asian countries which emphasize relevant indicators rather than indicators generally accepted in the western countries;
- (2) Methods of modernizing the population census, the most important single source of information on the life of the people. The possibility of conducting five-yearly censuses to synchronize with five-year plans should be explored;
- (3) Ways of strengthening the statistical system to make it more unified by cutting out duplication of work and multiplicity of agencies;
- (4) the generation of an atmosphere of scientific inquiry and research by discarding bureaucratic procedures and introducing innovations in research administration;
- (5) the pledging of 10 per cent of the developmental outlay in each field for research and data collection. This is especially necessary in such areas as health, family planning, housing and environment;
- (6) the evolving of a suitable mechanism whereby the research findings are automatically conveyed to and taken note of by policy-makers so that research is translated into action.

A word of caution is also called for. The craze for data collection and unnecessary computer work in the name of research, which has become a big industry in some developed countries, should be avoided by the developing countries. The quality of life cannot be improved by merely accumulating massive quantities of data. Quantifying poverty may interest some scholars, but the problems of neither population nor environment can be solved unless human values are respected more than decimal points.

Directions for action relevant to planning, implementation and evaluation

Space does not permit of discussion of the manifold aspects of action programmes in the light of the foregoing chapters. In this concluding section, only one recommendation will be made for the consideration of planners and policy-makers.

It is clear that, at least in the next two decades, several developing countries such as India will remain predominantly rural and agricultural, and the prospects

of any reduction in absolute terms in the rural labour force are bleak. City-based industrialization and urbanization have a limited potential for absorbing surplus labour from rural areas. The number of migrants to cities will no doubt increase in absolute terms, but in terms of the industrial structure of the region as a whole, it is unlikely that there will be drastic changes. The population problem, therefore, must be viewed, in terms not only of a slowly declining birth-rate and a rapidly declining death-rate, bringing about a demographic gap, but also of the inertia of the economic structure and the resulting "stagnation trap." While the demographic gap can be reduced by a more effective formulation and implementation of family planning programmes, bold developmental measures must be adopted to overcome the stagnation trap.

If surplus labour cannot be transferred from rural to urban areas, the solution lies in siphoning it off from one region to another within the same country. This is, of course, a well-known proposition, and several countries have plans for population redistribution, planned migration and resettlement of people. But these plans have not been very successful because the availability of land for new settlement is limited in most Asian countries facing the population problem. Furthermore, opening up new areas for settlement calls for massive investment in infrastructure, and the problem of adequate employment opportunities persists in the newly settled areas also.

Our proposal is basically in terms of generating increased mobility of labour in an organized manner, without attempting resettlement of people on a permanent basis. In India, for example, the system of labour recruitment through labour contractors was quite common. Even today a high proportion of construction labour is contract labour. However, this is a very undesirable method of recruitment, inasmuch as it looks upon human beings only from the point of view of cost of production, and every effort is therefore made to minimize this "cost." On the other hand, recruitment of labour through employment exchanges has not worked in rural areas and, by and large, migrant labour is heavily dependent on the network of relations and fellow-villagers in other regions, especially in the big cities.

The Government should establish "labour banks" all over the country, especially in rural areas, in order to recruit labour systematically from surplus areas and transfer it to the deficit areas, even on a short-term basis. It is well known that there is full employment during harvest time in rural areas, and in areas which have experienced the "green revolution" there is even a shortage of labour during peak seasons. Schemes to generate such mobility of labour will obviate the need for mechanization of agriculture, which is going on in the "green revolution" areas, even though there is surplus labour in the country as a whole. In a country such as India, a scheme of that type must succeed in overcoming the social and cultural barriers (such as language, caste, religion) which inhibit the free flow of labour. The cost of migration should be cut down by introducing free railway passes, and as far as possible the migration should be confined to workers only or groups of family workers, excluding dependents. There should be short-term training programmes and orientation courses and the workers should be housed in self-help, low-cost camps and temporary hutments in a decent environment and not left to fend for themselves. There should be a "central labour bank" which would keep a continuous watch on the employment market

and direct the flow of labour throughout the country. Distance should not deter any migrant under our scheme. The familiar process of step-migration should be skipped and the maximum mobility of labour generated. In the matter of recruitment, preference should be given to landless workers in rural areas and marginal workers in urban areas. Adequate legislative and administrative measures will have to be taken to facilitate the working of these labour banks throughout the country under the Ministry of Labour and Employment. The question of regulation of wages and enforcing a minimum wage rate must also be tackled effectively.

In brief, an attack on mass poverty can be made by generating mobility of labour on a large-scale throughout the country, even on a seasonal or temporary basis. This will generate employment, income and occupational mobility and help in attaining a better ecological balance, and will also relieve the heavy pressure of population on land in some parts of the country, meet the new demand for labour in "green revolution" areas and eventually release the forces of demographic and economic modernization on a lasting basis.

TOPIC 7: RESEARCH AND TRAINING, AND THE DISSEMINATION OF INFORMATION AND KNOWLEDGE

FUTURE LINES OF RESEARCH IN THE FIELD OF FAMILY PLANNING*

by

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In discussing future lines of research in the field of family planning, it should be recognized that research needs will differ, not only according to the socio-economic and cultural setting in which the research is to be carried out but also in the length of time family planning programmes have been in operation in that setting. Although the majority of countries in the ECAFE region have introduced national family planning programmes, some have done so only recently and the problems they are currently facing are probably very similar to those experienced by other countries. This paper will discuss the major lines of research required in the field of family planning without specific reference to the stage of the programme or the problems met with in particular situations. In this discussion we are greatly assisted by the deliberations of a series of working groups organized by the ECAFE in the past few years and the recommendations for research that have emerged therefrom.^{1/} The country statements prepared by various Governments for the Second Asian Population Conference also serve as a background for high-lighting the fields requiring research.

Data on fertility levels and interrelated factors

The acceleration in the rate of population growth that occurred after the Second World War in most Asian countries was due primarily to a reduction in death-rates. However, it served to indicate the high levels of fertility that prevailed there, and the social and economic consequences that would result if fertility levels continued to remain high. In several countries of the region, programmes have been introduced with the objective of lowering rates of population growth.

* The opinions expressed in this document are the author's own and do not necessarily reflect the views of his organization or those of the ECAFE secretariat or of the United Nations.

^{1/} Working group on administrative aspects of family planning programmes, 16-24 March 1966, Asian Population Studies No. 3 (United Nations publication, Sales No 66.II.F.10); Working group on communication aspects of family planning programme, 5-15 September 1967, Asian Population Studies No. 3, (United Nations publication, Sales No. E.68.II.F.17); Assessment of Acceptance and Effectiveness of Family Planning Methods, 11-21 June 1968, Asian Population Studies No. 4, (United Nations publication, Sales No. E.69.II.F.15); Regional Seminar on Evaluation of Family Planning Programme, 24 November -12 December 1969 Asian Population Studies No. 5, (United Nations publication, Sales No.E.70.II.F.20); Working Group on Training of Personnel in Family Planning Programme, 27 July -7 August 1970.

When India introduced a national family planning programme in the 1950s, it had the distinction of being the first country in the world to do so. This pioneering effort had also its disadvantages, as India could not turn to any other country for knowledge on how public family planning programmes should be planned and executed. In the organization of such programmes all the complex factors involved in determining the levels of fertility and their trends have to be understood and taken into account. The huge task that the family planning administrator is normally faced with will be realized when it is recognized that several developing countries do not possess adequate knowledge on levels of fertility and its differentials as affected by urban-rural residence, education, occupation, differences in family structure and other ethnic characteristics.

Information on these matters is important in gauging the changes in fertility levels that arise as a result of social and economic changes. In addition, it is also important to know, as a starting-point, the attitude towards family size and the extent of knowledge and practice of contraceptive methods in the different population groups within a country. Where vital statistics are deficient, it will be necessary to obtain data on them either by introducing a sample registration system or through carefully conducted sample surveys. Such data will not only be useful in organizing the family planning programme as indicated above but also in evaluating its effectiveness. In addition, successive KAP surveys will also provide data useful for these purposes.^{2/} The work of the International Union for the Scientific Study of Population and of the Population Council, New York, will be found of assistance in planning the surveys. The International Statistical Institute, in collaboration with the International Union for the Scientific Study of Population, is organizing a world fertility survey, which will also indirectly provide some of the required data.

Data on programme performance

(a) Basic statistics on achievement

The data most directly related to the achievement of a family planning programme are those related to the number of "acceptors" — persons accepting methods from the programme — and their characteristics. Various procedures have been used to obtain data on acceptors, such as the use of the coupon system in the Republic of Korea, and of the individual client record in a number of countries. While the amount of information obtained in these records should not overburden the staff responsible for its collection, it should be sufficient to guide the administrator in evaluating and improving programme's achievement. The regional seminar held in ESCAP recommended a list of items which might comprise the core list in these records.^{3/} The Seminar pointed out that "Studies on acceptance rates by crucial characteristics of acceptors over time might throw light on the relationship between acceptance and pattern of fertility decline as well as detecting the hard core of the population."

The processing of the data on acceptors should be timely, if they are to be of practical use. Every country with a national family planning programme should

^{2/} Regional Seminar on Evaluation of Family Planning Programme 24 November - 12 December 1969, *op. cit.*, para 184(a).

^{3/} *Ibid.*

work out the procedure best suited to its own conditions. An expert group suggested that "ideally, the processing of data should be done centrally."^{4/} Recently, sophisticated methods for processing data on acceptors have been adopted in the Philippines and Indonesia, and it will be instructive to compare the experience of the countries with that of other countries which have used relatively simpler methods.

Acceptance of a method from the programme is only the first step in the practice of family planning. Continued use of the method is also necessary for proper spacing between children or for limiting their number. As a measure of continuance, "continuation rates" are worked out, the requisite data for the calculation of continuation rates being obtained through a retrospective survey of the experience of acceptors. As discontinuance can have several causes — expulsion, removal or accidental pregnancy, as in the case of the IUD — complicated life-table techniques are necessary to assess "continuation rates."^{5/} For the most part, these techniques have been used for the IUD. Their application to other methods — especially the traditional methods — creates problems.^{6/}

Historically, the effectiveness of a contraceptive method has been measured by the calculation of pregnancy rate when the method is still being used. Of late, **use-effectiveness** is used as a measure of the pregnancy rate. While **use-effectiveness** is valuable in dealing with a specific method, observations of family planners have shown that several of them switch methods. In order to cope with the change-over of methods, a new concept called extended use-effectiveness was evolved at the ECAFE Expert group meeting on assessment of acceptance and effectiveness of family planning methods, held in 1968. There is need to develop survey methods suitable for the calculation of extended use-effectiveness in different cultural settings.

(b) Information to improve programme performance

Performance of a family planning programme depends not only on the attitudes of the population served, but also on the inputs to the programme in the form of the quantitative and qualitative aspects of personnel deployed, the supply system of contraceptives and on the amount of education and communication work undertaken through home-visits, number of group meetings, exhibitions and so on. A routine statistical system, if properly organized, can provide such information which can then be correlated with performance judged in terms of acceptors or continuation rates. Such correlation studies are useful in assessing the cost-effectiveness of the different components of the programme.

The programme's effect on fertility

The ultimate success of a family planning programme lies in the decline of fertility. In countries with accurate vital statistics, it is usually not difficult to

^{4/} Assessment of Acceptance and Effectiveness of Family Planning Methods, *op.cit.*, para 72.

^{5/} R.G. Potter, "The multiple decrement life table as an approach to the measurement of use effectiveness and demographic effectiveness of contraception", paper contributed to the Sydney Conferences (International Union for the Scientific Study of Population) 1967, pp. 869-883.

^{6/} C. Chandrasekaran & Malini Karkal, "Continuation rates, use-effectiveness and their assessment for the diaphragm and jelly method" (in press).

study trends in fertility. Where vital statistics are deficient, it is necessary, to obtain estimates of fertility levels through sample surveys. Rough estimates can also be made from data on age-distribution of the population, obtained through censuses or sample surveys. Over-all declines in fertility-rate cannot be attributed entirely to the family planning programme. Three types of influences could have operated to produce the observed change, viz. direct programme effects, indirect programme effects and non-programme effects. Non-programme effects are those attributable to influences that would have operated even if the programme had not been instituted. Indirect programme effects are those due to couples' resorting to the use of family planning methods because of programme propaganda without, however, directly availing themselves of the programme's methods. It is becoming increasingly necessary to identify and assess these three effects separately. Programme effects — direct or indirect — are those that matter when cost-benefits of family planning programmes are to be investigated. Much work remains to be done to improve the methods of separate assessment.

Attempts to study the direct programme effects with the help of data on acceptors and continuation rates^{7/} have not been without limitation.^{8/} The methods applied call for information on biological factors such as post partum amenorrhea, secondary sterility, and fecundability, or field of study emphasized by the ECAFE regional meeting. ^{9/}

As Freyman and Lionberger noted some years ago, the purpose of research in family planning is to assist the building up of effective programmes. From this point of view, research has to be carried out in a dynamic setting, some changes being deliberately introduced to ascertain their relative effectiveness. In addition, new knowledge gained in one part of the world has repercussions and applications elsewhere. Witness, for instance, the changes that have occurred in the family planning methods available for popularization. To bring out a new method usually calls for a change in the organizational structure, and the family planning organization must be sufficiently flexible to adopt the changes.

A family planning programme can, for the sake of convenience, be subdivided according to various aspects, such as those of administration, communication, education, training and evaluation. Research on these several areas is implied, as well as on their inter-relationships. Working group organized by ECAFE have brought out the need for further research in the various fields,^{10/} a few examples of which may be noted:

(a) **Administration.** Staff requirements, the use of paramedical personnel, static versus mobile services, the role of incentives, the provision of adequate contraceptive supply-lines and transport facilities.

^{7/} R.G. Potter, "Estimating births averted in a family planning programme," in *Fertility and Family Planning: A world view* (University of Michigan 1969); D. Wolfers, "The demographic effects of a contraceptive programme," *Population Studies* vol. XXIII, No. 1, March 1969.

^{8/} C. Chandrasekaran, D.V.R. Murty & K. Srinivasan, "Some problems in determining the number of acceptors needed in a family planning programme to achieve a specified reduction in the birth rate." Paper presented at the IUSSP meeting, Mexico City, 1970.

^{9/} Report of the Regional Seminar on Evaluation of Family Planning Programmes, *op.cit.*

^{10/} See footnote ^{1/}.

(b) **Communication.** The role of various mass media (e.g., radio and television, films, newspapers and other printed material, hoardings, posters, exhibitions and campaigns); the purpose and possible integration of mass communication and face-to-face communications; the use of strategic groups, such as political decision-makers, employers, and the medical and nursing professions; communication through peers and satisfied adopters; ways of containing rumour and counter-propaganda, and the structure of a communication organization.

(c) **Education.** Under this heading, reference may be made to the growing emphasis on the provision of population education in secondary schools.

(d) **Training.** Teaching content, trainers' qualifications in relation to training, teaching procedures and methods, studies in the learning process, trainee feedback on training programmes, job performance of various categories of family-planning workers, the role of field training.

Research through computer simulation

The family planning administrator is faced with several alternative methods of operation and has necessarily to make his choices. He might like to know, for instance, whether a greater reduction in fertility could be effected through induced abortion or through sterilization. Even in the case of induced abortion there could be alternative procedures, abortion being the sole method of choice or abortion being allowed only when the pregnancy is established as due to contraceptive failure. In the case of sterilization, he might be interested to know the relationship between the age, parity or the number of surviving children of the person sterilized, and the number of births prevented as a result of sterilization. Answers to such questions require elaborate calculations entailing hypothetical populations. The task can be made manageable through computer simulation exercises.

Integrated approach to family planning

Programme organization has been undergoing a change: the clinic-oriented approach adopted initially has given place to the community approach. At present, there is a feeling that family planning services would be more successful if combined with other services, such as MCH, nutrition, family living, woman's status and human rights, and the resultant cost-benefits should be investigated.

Role of research

The number of issues on which research can be undertaken are limitless. However, it should be recognized that in many developing countries the task of popularizing family planning and thereby checking the rates of population growth is an urgent one. If research is not to impede but complement the provision of services it would be prudent to establish within the family planning organization a small unit whose task would be to identify and undertake research work of major importance.

A PROPOSAL FOR THE SYSTEMATIC COLLECTION AND DISSEMINATION OF INFORMATION ON POPULATION

by

the ECAFE secretariat

The conventional approach to population information generally divides problems into those of collection, processing and dissemination of information; it is concerned mainly with finished products, such as papers, books and films, and uses very costly equipment. The aim here is not to criticize this system but to suggest that there may be other approaches that are better adapted to the needs of the ESCAP region. In the development of the ESCAP secretariat's activities the new approaches are being tried with a view to retrieving and sharing information more quickly.

This paper proposes an approach that will facilitate the rendering of clearing-house services, while taking into account practical realities. This approach seeks:

- (1) to recognize the situation of the region and the specificity of the environment;
- (2) to identify and analyse the needs;
- (3) to establish a plan of action based directly on the situation and the identified needs.

Situation of the region

Although it might seem obvious, it is necessary to stress the element of diversity that exists in the region, within countries, in the population questions that arise (their nature, level, topic), and in the forms of information. This element is being mapped through exploratory surveys carried out by the ESCAP secretariat: the variety of institutions working in the field, the new disciplines appearing on the fringe of classical ones-the whole field is dynamic and in upheaval. Any system dealing with information must be flexible enough to be able to cope with this diversity and with both expected and unforeseeable changes.

A viable information system must extend beyond the conventional system of collection, processing and dissemination and, from the start, procedures must be set up to identify all needs on a continuing basis.

Identification of needs

In order to identify needs, the system requires an exploration unit which systematically scans the region to study not only general needs, but also specific needs: a department may want to contact experts in a specific subject; another may require particular types of data and, having received them, may redefine

its needs again. Needs vary according to the nature of the organization, from those of a major institute with large research teams and computers, to those of the small department, relatively isolated, where one individual is working on a project that may seem unsophisticated to outsiders but that can be extremely valuable locally (for student training, say, or town-planners).

Some needs can be expressed easily by organizations. In other cases, the research workers may have difficulty in identifying them. Here a regional clearing-house can assist in recognizing situations, detecting problems already identified elsewhere, and distinguishing between the expressed and unexpressed nature of needs. It should also be recognized that a regional clearing-house can serve not only as a catalyst but also as a radar screen, by describing regional pictures which suggest fields to be studied and identifying fields in which there may be over-concentration. This type of clearing-house promotes the optimum use of existing resources. The analysis of the ESCAP survey of research and teaching institutions is a step in this direction. 1/ However, it is obvious that a study of the needs implies a good knowledge of existing activities in the region: it is essential to know the basic aims of institutions, staff, periodicals and other elements. Here again, a certain amount of preparatory work has been done by the secretariat through the Directory of key personnel and periodicals in the field of population in the ESCAP region. 2/ Related publications are in preparation, as indicated in the concluding section of this paper. Such surveys become routine, as information is kept up to date. They must be simple in presentation and easily updated, in order to obviate loss of time, waste of money and complex funding procedures. Loose-leaf directories whose pages are replaceable, for example, remain current for several years through the periodic issue of new pages.

Recognizing information and reporting it

Another function sometimes overlooked in information systems is the necessity to motivate organizations and individuals in the field of information. They must realize the importance of the problems and follow through. The problem is similar to that of getting people who know about family planning to practise it. It is easy to request information and then complain if it is not available or delayed, but people tend to become forgetful when they are in a position to contribute information. This is partly because they do not recognize the long-range advantage in collaborating, and partly because they often do not realize what constitutes information or how to present it. For example, a research worker in a certain speciality knows the names of other experts in his field and may take it for granted that other specialists also know them. He does not realize that his knowledge constitutes valuable information, which shows how necessary it is to promote the idea that nearly everything, if presented in the right form to the right person, is useful.

Needs and motivation are two examples of the fact that an information system, to be efficient, must be more than just a library, a documentation centre or a broadcasting system. It is all these, and more. An information system works through channels. If there are barriers, a channel may not function properly. The secretariat has begun to study these barriers systematically.

1/ POP/APC.2/BP/12.

2/ E/CN.11/898.

Action programmes

Action programmes are based on determined needs. Several types of action may be necessary—systematic action, ad hoc action, and the like.

Systematic action means that certain types of information have to be systematically and routinely collected, then processed and disseminated. Surveys show that this type of system does not yet function properly within the region. This is seen by examining what happens to research findings, for example. Dissemination of research findings often depends directly on the type of institution, the financing of the project, and so on. In some cases, no data are published because no funding agency supported the project; in others, the findings are sent only to journals with limited circulation or to the organization requesting the study. Rarely is information on the research findings sent to the mass media. Much needs to be done to disseminate and hence to share information more quickly and widely. However, the danger of deluges of information exists. Information should be distributed selectively and it should consist mainly of basic “hard-core” information: ^{3/} calendars of meetings, methodology, ideas, concepts, comparative data, examples, etc. This type of approach differs from the usual one where the solution or answer is seen as stock-piling large quantities of information in order to have a reasonable chance of satisfying eventual users, as regards at least the content of the information if not the presentation. The probability of wastage can be considerably reduced in the “ad hoc action” to be discussed later. Meanwhile, various steps have been taken to be selective through the preparation of newsletters, calendars of meetings, the study of descriptors, the collection of references and certain types of materials, and the establishing of a selective mailing list deliberately designed to reach the persons who make decisions, who inform the decision-makers, who design and undertake research or fund such endeavours, or who are responsible for training and the implementation of programmes. In an action-oriented system, it is particularly important to analyse the cost of information: what it costs to obtain, the price one is willing to pay, the use of the information; problems of postage; reproduction; copyright or the patenting of ideas in a central location, translation, and wastage are some examples. In evaluating costs, one should consider not only the direct project costs, but also the direct or indirect benefits accruing to other institutions or Governments: increase in productivity in research, for example. These invisible savings may be the most important. They are particularly relevant in long-range economic planning.

It is obvious that no single agency or regional organization can tackle all these questions, but, on the other hand, the proliferation of regional organizations can be a handicap: duplication of effort, unhealthy or unnecessary competition, discouraging the sources of information because the same too few are constantly solicited, and the ever-present danger that a modest project may be pushed beyond its intended size and importance and its modest but useful results disparaged. One solution might be the establishment of a national clearing-house in most countries, and perhaps two or three at the subregional level, which are well-articulated with each other through a central regional clearing-house. Again,

^{3/} By this is meant information which has potential impact and use: e.g., a new concept might lead to many more developments, going beyond the nth classical KAP survey.

it is necessary to be realistic and to adapt each clearing-house to local conditions, priorities and possibilities.

Ad hoc action

This most important aspect of clearing-house operations is also the most difficult one. Information must be tailored to the utilizers. The ideal is that each Government, institution or group gets the information that it needs and only that information, and in the form needed. As an example, a regional survey was conducted to learn what audio-visual equipment was owned or available to research and teaching institutions for utilization of audio-visual materials that would be produced at the Second Asian Population Conference. Questions were asked concerning the equipment available that could be rented or borrowed, the utilizers (number of interested students, faculty, townspeople, visitors), language, and so on. It is clear that there is no point in sending films, tapes or slides to institutions which have no access to such equipment or sending four-track tapes to institutions which have two-track equipment. Equally important is the fact that knowledge of institutional equipment makes it easier to plan clearing-house programmes in the future. It should also help other United Nations-related agencies, governmental programmes and non-governmental funding agencies.

Ad hoc action, to be efficient, i.e., to be of real use to the producers of information and to the eventual utilizers, implies a new approach, which is that of retrieving information at the source as soon as it comes into existence. Normally, the conventional system will get the information on the research project, the publications and reports, at the end of the project. This involves a significant loss of time since the project probably started several years earlier. It is also too late to change anything. Revision or curtailment is impossible. One has to deal with the finished products: useful or not, available or not, and possibly in a language or a form which cannot be properly utilized.

In this suggested *ad hoc* tailoring approach, information can be collected at *the beginning* of the project, as shown in the chart. As soon as it is outlined in some detail, it can be analysed, broken down into various components and each component systematically explored for utility. For example, a project in south India on infant mortality could be of interest from a methodological point of view to institutions in Indonesia, from the findings point of view to the local public health authorities in south India, and from the data point of view for simulation models being elaborated in Japan. This knowledge of potential utilization enables the clearing-house to plan the needs and forms of dissemination: for example, one report on methodology especially prepared for Indonesia's use would be translated into Indonesian with clearing-house assistance, one report could be written for non-specialists and summarized in a newsletter pointing out the relevance of the findings for health programmes; special data sheets giving the appropriate sources could be prepared for Japan which might do its own translation, plus some tapes or slides for teaching institutions in the region. Thus the information could very quickly benefit users in three or more countries, *long before the printed report is prepared*. In addition, the possibility of a "feedback" of information from Japan or Indonesia to the original researcher in India might arise.

Such a system makes the best use of available information without loss of

time, avoids unnecessary publication, and is not limited in the form of dissemination (books, audio-visual, etc.). It also has the advantage of being flexible enough to incorporate information on concepts, ideas, and so forth which are not usually covered in information systems. When this is done for several projects, their components become interdependent and there could be a multiplying aspect. The ESCAP secretariat has begun to move into this type of action and intends to put increased emphasis on it with the assistance of its network of population correspondents. To work at maximum strength, the system must be co-operative to the fullest possible extent.

A network of clearing-houses would provide such maximum strength.

Building and strengthening of clearing-houses

Clearing-houses set up on national or subregional levels have to be carefully planned, in particular so as not to close doors to future developments. A crucial area not to be overlooked is the co-ordination and dovetailing of the activities of these additional clearing-houses at the subregional level. If it is desirable that such activities be decentralized as far as possible, co-ordination at the regional level becomes fundamental, otherwise the effectiveness of the national clearing house will be limited.

Opinions change. The Burmese author U Khin Zaw wrote of his people that they "like to be calm and unhurried. It is only because of the stresses of modern times that the Burmese have been drawn to the towns, which are garish and un-Burmese." ^{4/} One of his countrymen, the modern poet Win Pe, thought otherwise and wrote that, although he had learned the consonants and vowel sounds under the jack-fruit trees in a monastery garden and history in a small town school-house, "now that I find myself in the city, Rangoon, I like it here." ^{5/}

As opinions change, so do the needs for information. What sufficed only last year or the last decade may not suffice today. Information shared as early as possible may reduce costs and speed economic development since, as has been noted, nearly everything, if presented in the right form to the right person, is valuable.

Development of ECAFE's Population Division Clearing-house and Information Section

The First Asian Population Conference, in its recommendation 11B on international co-operation, stressed the importance of information and its exchange.

The clearing house functions were partly carried on by staff members in the Social Development Division until the creation of a clearing-house and information section within the Population Division in January 1969. Initial staffing was not completed until mid-1972. The present clearing-house has an informal division of labour with (a) a reference centre which houses regional data, provides reference services and is developing a list of descriptors, etc.; (b) a dissemi-

4/ Helen G. Trager, (ed.), *we the Burmese*, (New York/London, Frederic Praeger, 1969), p. 87.
5/ *Ibid*, pp. 87-88.

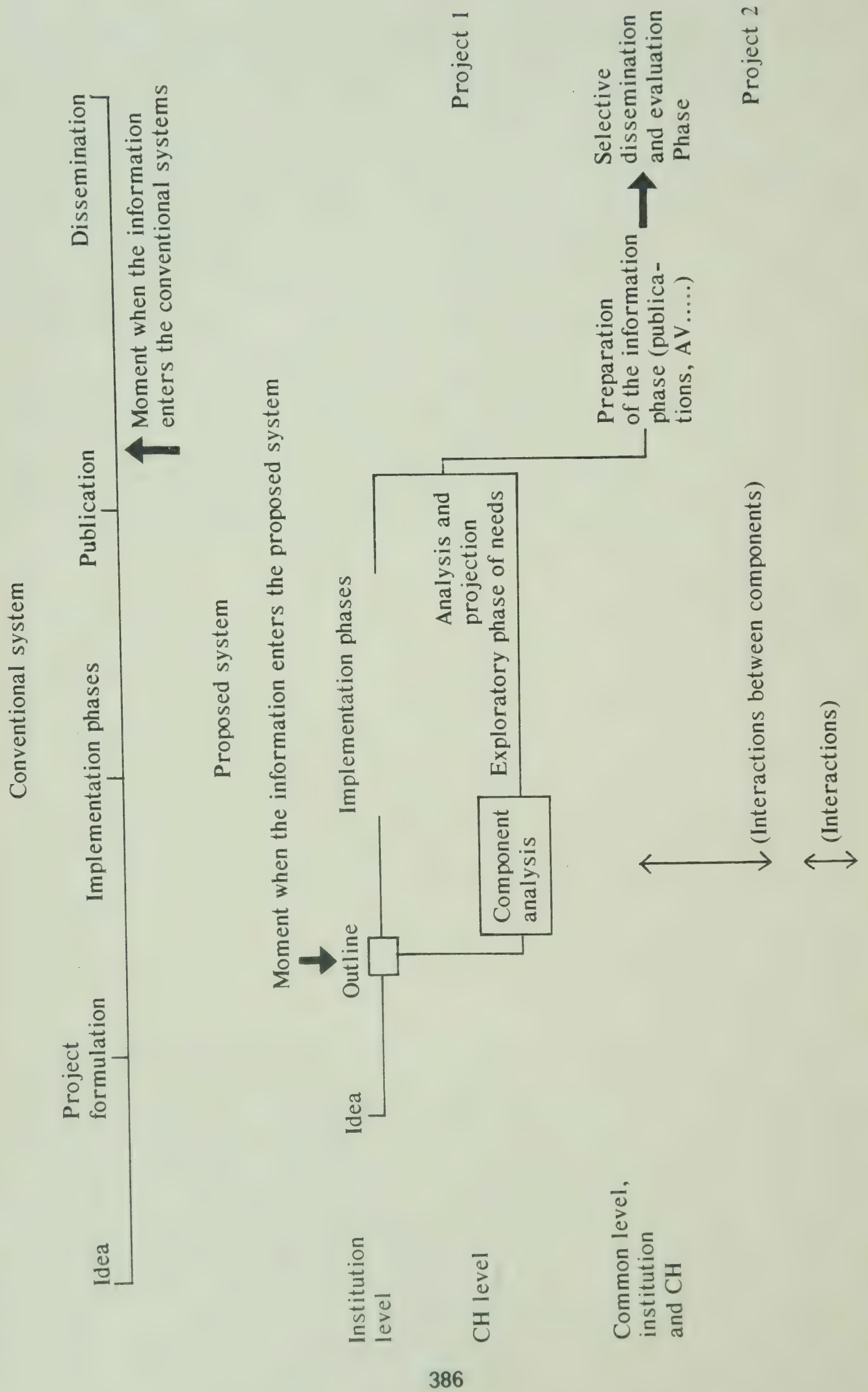
nation unit which concentrates on the Asian Population Programme News, publications about the work of the Division, and audio-visual information; (c) a research unit which conducts surveys, evaluates findings, and prepares and updates directories, bibliographies, and the like.

The section collectively calls attention to new ideas and stimulates interest and action in population areas by judiciously supplying materials to decision-makers, research workers, and those who influence opinions. This material is developed through the Asian Population Programme, with the help of ESCAP's network of population correspondents being set up at government and academic levels to speed the flow of information and adapt to specific needs. Non-governmental institutions are included. IPPF member contributions are co-ordinated through its international relations officer for Asia in Bangkok.

Regional surveys conducted to date by the section include: (1) survey of key personnel in the population field; 6/ (2) first survey of periodicals publishing population information 6/; (3) survey of demographic research and teaching institutions 6/; (4) survey on the dissemination of information of research projects in the population field; (5) second survey on periodicals publishing population informational news; (6) survey of audio-visual equipment and interest in audio-visual materials on population in academic institutions 7/.

6/ Published.

7/ Under preparation.



FAMILY PLANNING MESSAGE SYMBOLS: SEMANTIC PROBLEMS IN DIFFUSION*

by

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The meanings of messages about family planning exist only in the eyes of their beholders, the intended audience — not in the messages themselves, nor in the mind of the communicator. Unfortunately, we often assume that our audience will perceive a message symbol in the same way as we do. This usually leads to surprise and disappointment when we later realize that they interpret our message in ways that we did not intend.

There are many illustrations of this problem in the case of family planning programmes in Latin America, Africa and Asia. Most family planning methods, and the concept of family planning itself, began in Europe and North America, and then spread to other countries. We encounter very difficult problems in forging meaningful translations of these terms in such languages as Hindi, Kiswahili and Spanish. Many family planning innovations have come from medical research in English-speaking nations of the West, and it is a long way, semantically, to an illiterate peasant in Asia. How can one put a complicated idea like the IUD in words and thoughts that can be understood by such receivers?

The world-wide family planning movement under way in the 1960s and 1970s necessitates the creation of a new, specialized vocabulary for each language-group. We frequently damn our later efforts at diffusing family planning methods by a haphazard selecting of word-symbols. Ideally, we should conduct a careful sociolinguistic analysis of these words and symbols before a family planning programme is launched.^{1/} But this approach has never been undertaken. Instead, we gradually slip into the use of terms familiar to ourselves. These become widely accepted by our co-workers and clients. It is then very difficult to change our choice of words, even when we later find that they convey unintended or unfavourable impressions to our audience.

The purpose of this paper is to describe certain of the semantic problems created by our family planning word-symbols, to suggest an approach to overcome these difficulties, and to point to needed research on sociolinguistic aspects of family planning. The following will be dealt with (a) the linguistic equivalents for the concept of family planning, (b) the terms for various family planning methods, (c) the nomenclature of human reproduction, and (d) the

* The opinions expressed in this abridged paper are the author's own and do not necessarily reflect the views of the ECAFE secretariat or of the United Nations.

^{1/} Sociolinguistics is the scientific study of the relationships between human languages and the culture and social institutions of the languages' speakers. Hence, sociolinguistics represents a merger of the social sciences and linguistics, the scientific study of human languages.

insignias of family planning programmes. All are words or symbols that must be used in family planning communication activities.

A theme of the paper is that the message symbols used for an innovation are important in influencing its diffusion. This point was not fully grasped in the classical diffusion model, although it was acknowledged that the receivers' perceptions of the innovation determined its rate of adoption. For example, innovations with high relative advantage, high compatibility, low complexity, observability and trialability, were found to have rapid rates of adoption (Rogers with Shoemaker, 1971). But it was not until the advent of family planning innovations that communication scientists fully realized the great importance of the sociolinguistic aspects of innovations in affecting their diffusion. Perhaps this modification in the classical diffusion model was necessitated because the ideas (a) deal with strongly held beliefs, and (b) are often socially taboo.

Linguistic relativity, perceptions of word-symbols, and shared meanings

Change agents can often anticipate and predict an innovation's *form* its directly observable physical appearance. They can understand, and effectively explain to their clients, that the IUD is a small plastic device inserted in the woman's body, for instance. Perhaps an innovation's *function*, the contribution of the new idea to the way of life of the system's members, can also be grasped by change agents. But seldom are they able to predict an innovation's *meaning*, the subjective perceptions of the idea by the clients (Rogers with Shoemaker, 1971). These meanings, of course, only exist in the minds of the receivers. Often, they can only be explored via careful and skilled probing by social scientists.

International businessmen have been aware of this sociolinguistic fitting for their new products; as in the case of family planning, these sources seek favourable acceptance of their innovations. Most such companies would not think of introducing a new product to a market audience without considerable prior research effort to select an appropriate name for it. In fact, there are commercial market research companies in most countries which specialize in selecting linguistically and culturally appropriate names for various new products. The research sequence begins when several possible names are tentatively selected; they are then pre-tested with a sample of the audience, and further modifications may be necessary. Eventually, a word-symbol is selected that has the desired meaning for the customer. This is a receiver-oriented approach; the innovations are not labelled with terms that only the sources find meaningful that would be disastrous.

The field of international marketing is replete with experiences that illustrate the importance of the approach being advocated in this paper. For instance, a product introduced into French-speaking areas by a major United States soap company bore a name which has an obscene connotation in French. One seldom makes such an egregious error twice.

Words are the thought units that structure our perceptions. The Whorf-Sapir hypothesis of linguistic relativity postulates that an individual's language

determines what he sees and what he perceives. (1, pp. 134-159).^{2/3/} It is difficult for us to perceive an object if we do not have a word for it. For example, Navaho Indian children cannot perceive the colour orange when shown a colour wheel. They have no thought-symbol for it. Likewise, in many cultures women have more terms in their vocabulary for colours than do their male counterparts. So most English-speaking women can "see" such colours as "mauve," "beige," and "fuschia," while most men cannot.

The meaning of a symbol comes from convention, from agreement among a people that a particular sign will represent a particular referent. The exact nature of the symbol, whether a set of letters, marks, or sounds, is irrelevant as long as the individuals using that symbol agree that such represents the object being described.

This does not mean that every member of an audience will have exactly the same meaning for a given symbol. We know that meanings are very imperfectly shared; this is one reason for communication ineffectiveness. But most individuals, as they learn to speak a language, implicitly accept the word-symbols of their society, and the meanings of these signs are thus widely shared.

When a new word enters a language, attendant meanings for it must be developed and shared by individual receivers in order for that word to be used effectively in communication. We should emphasize that any word-symbol can take on a desired meaning in the minds of an audience, given enough time and adequate contextual usage of the new word to teach its intended meaning. For instance, speakers may not even be aware of the meanings of the different words that make up an expression like "family planning," or of what a noneuphemistic meaning of the expression would imply. For example, how many of us ordinarily think of "breakfast" as breaking a fast (2, p. 28). With repeated usage, any word or set of words can take on an intended meaning.

For instance, we could start to call family planning by some nonsense word in English like "glope" or by a previously meaningless sign like □. If we used these symbols frequently enough, and in proper context (for example, "Have a happy family, use glope"), they would eventually take on the desired meaning of family planning.

But assume that we selected words or other signs that already had a meaning, and one that was not family planning but perhaps something close to it. For instance, perhaps we unwisely picked the sign □ for family planning; suppose that sign previously meant something else, like pawn shops? Yet this is exactly the kind of linguistic error that we have made in the past 20 years in the case of family planning.

^{2/} The figures in parentheses relate to the bibliographical references at the end of the paper.

^{3/} Whorf did not actually state the hypothesis in exactly this way (the so-called "hard" form), although he directly implied it: "All observers are not led by the same physical evidence to the same picture of the universe, unless their linguistic backgrounds are similar" (Whorf, 1956; p.v.). Of course, the direction of the hypothesis can also be reversed; that is, one's perceptions and experiences have an effect on one's language. For example, the German word for leader (*Fuehrer*) has gained a different connotation since the rise of Hitler.

The concept of family planning

1. From birth control to family planning

The term "birth control" was coined by Margaret Sanger and some of her friends, and first used in Mrs. Sanger's monthly *The Woman Rebel* in 1914. (3,p. 105). Her purpose in selecting "birth control" was to convey to the public, in a minimum number of words, the idea of planned contraception. But there were strong negative connotations to the expression; many individuals felt that "control" implied manipulation or policing of sexual behaviour, ^{4/} and a corresponding loss of individual freedom. ^{5/}

So "family planning" and "planned parenthood" came into more widespread use as euphemisms for the movement. In 1939, the National Birth Control Council of England was changed to the Family Planning Association, and in 1942 the name of the Birth Control Federation of America was changed to the Planned Parenthood Federation of America. The motive for this change in titles was an attempt to make the idea more acceptable to the public. Later, in the 1940s, "family planning" generally began to replace "planned parenthood," and today most official government agencies and their programmes bear the name "family planning," although many private agencies still retain the title of "planned parenthood." ^{6/}

Family planning is a euphemism that is rather ambiguous in its real meaning. ^{7/} First, the term does not clarify whether the family (a) is being planned, ^{8/} or (b) is doing the planning, or both. If the former, we might better speak of "birth planning". ^{9/} If the latter, we actually mean parents in a nuclear family, rather than "family," which might include children or kin, or both. Lastly, by "planning" we really mean deciding on the number of births desired, plus taking action (such as using contraceptives) to ensure that these plans are realized.

If we define "family planning" operationally in terms of what family planning programmes actually do or seek to accomplish, we would include the following activities and objectives in most countries: (a) prevention of unwanted births, (b) child spacing, (c) reduction in the number of children desired, and, sometimes, (d) assistance of couples with infertility problems. So the actuality of family planning is quite different from what the concept would imply; hence

^{4/} And only the prevention of births, rather than also including assistance to certain families that wanted to have children (such as infertile couples).

^{5/} In the Republic of Korea, the Japanese term for "birth control" was used prior to 1960, which unfortunately carried the connotation of abortion. When the national programme began, a new Korean term (see table) was selected that is equivalent to "family planning".

^{6/} The world association of the various national private agencies is the International Planned Parenthood Federation.

^{7/} This ambiguity may be reduced by defining family planning as the idea, programme, or act of preventing births and of avoiding their consequences.

^{8/} Sometimes we also include a single adult as the unit in family planning, as in the case of an unwed mother.

^{9/} *Birth planning* is the wanting and designing of births by a unit of human life, from the individual or family to the national or international level. (4)

family planning is a euphemism. This euphemistic quality of the term contributes to widespread difficulties in attempts to translate literally the concept from English into various languages.

2. Translation into other languages

In many languages, the word most like "family" includes all kin members, in addition to the nuclear family of husband, wife and children. As an illustration, in the lingua franca of Indonesia, family planning is translated as "keluarga berentjana"; ^{10/} "keluarga" may include grandparents and others, as it actually refers to the related individuals who live together in a single household. ^{11/}

There are parallel problems in most other languages, as is shown in the table. These word-symbols for "family planning" in languages were obtained (a) from the title of family planning programmes operated by government ministries or private associations, and (b) from the terminology used by their planning workers in these locales when explaining family planning to their audience.

For most of the languages shown in the table the linguistic parallels for "family" means the extended family, the kinship system, or even (as in the "jamaa" of Kiswahili) the various individuals with whom one identifies, which might be kin, clan or organization. These difficulties in attempts to translate the English concept of nuclear family directly arise because until very recent times such family types were extremely rare or did not exist. ^{12/}

Similar problems arise for the direct translation of "planning": in many of the languages in the table the terminology unfortunately implies **national** planning of families, ^{13/} rather than the planning of family size by parents (and taking actions to achieve this planned size). For instance, the second word in the Indonesian expression "keluarga berentjana" implies "budgeting" or "fiscal planning," as most Indonesians do not think of planning as an individual's design for his future. In Urdu, "munsubha bandi" indicates aggregate national planning, rather than parental planning.

There are alternatives to making a direct literal translation of the English words "family planning" into a language. For instance, the Urdu translation of

^{10/} The private family planning association in Indonesia is called the "Indonesian *Planned Parenthood* Association" (in English), perhaps because of its affiliation with the International Planned Parenthood Association, but (literally) the "Indonesian *Family Planning* Association" in Indonesian (the words "keluarga berentjana" are used.) Thus, the loose translation of "keluarga berentjana" as "planned parenthood" in the Association's English title allows it to have the best of both meanings.

^{11/} And might even include some extremely close friends, who are not even blood relations. "Keluarga" probably would not include one's household servants, although they also lived in the household.

^{12/} As in other languages, the Urdu word "khandani" implies kin, rather than just the nuclear family (see table). Ahmad found in a readability study in Pakistan that, while there are three different words for "family," there was no one word in Urdu vocabulary for family which specifically means husband, wife, and children. (5, p. 25) Similarly, there are 14 different words in Kiswahili for "family", most of which really are equivalent to "kin".

^{13/} When India began its five-year plans, there was no commonly used word for "planning", so a word (niyojan) was coined by going back to Sanskrit roots.

"birth control" is a word-symbol meaning something like "birth restraint," free of the English meaning of manipulation and interference with freedom, and quite consistent with the Islamic theme of moderation, of seeking a middle road. So here we see how an attempt at translation of "family planning" from English to Urdu yields an unwieldy and unfavourable word symbol (table 1), while a more appropriate Urdu term, "birth control", ^{14/} was not used in Pakistan because of its unfavourable connotation in English.

Afghanistan is one nation where the English expression "family planning" was not translated directly into the indigenous language. Instead, family planning is referred to as "rahnomaye khanawada," or "family guidance." A word for "planning" exists in Dari but it is not used, as it implies (a) national planning, and (b) a kind of manipulation or control by others. "Rahnomaye" has a gentler connotation of "guiding" or "advising."

In north India, the English words "family planning" are often used for the programme, giving an obvious implication of foreign influence. The Hindi is "parivar" (kinship) "niyojan" (planning), although this terminology has relatively limited usage in the family planning programme. In south India, almost everyone in a sample of 310 villagers had heard of the concept of family planning, but Balarkrishna found that less than 40 per cent knew of it by the Telugu words "kutumba niyantrana," which is the official terminology for "family planning". (6, p. 28) The other 60 per cent of the sample understood family planning to mean only the limitation of family size (rather than child-spacing), and referred to it by the Telugu word for "operation" or "injection," both of which mean vasectomy. So there was a major confusion between (a) the concept of family planning, and (b) a specific method of family planning, among the south Indian villagers.

Few such understandability studies have been conducted in less developed nations, but it is estimated that perception of terms like "family planning" vary widely among members of a mass audience, and many of these meanings are widely inaccurate. Among a sample of urban literates in Accra, Ghana, interviewed by Research Bureau Limited (1970), 84 per cent said that family planning meant "care for children's education or growth"! About 42 per cent perceived family planning as "a system for running a family." However, 51 per cent of the respondents had fairly correct perceptions; they thought family planning meant "control of the birth rate."

Whatever expressions one might use for "family planning" in a given language could eventually come to have an intended meaning, after several years of contextual use and a sizable communication campaign. But this is a very inefficient approach. Family planning officials, perhaps with the assistance of sociolinguists and other social scientists, should select word-symbols for the concept that have the intended meaning in the minds of the audience. After pre-testing

^{14/} In fact, "birth control" was understood by 44 per cent of the men and 24 per cent of the women in an elite sample in Pakistan, while the most popular of three words for "family planning" was understood by 55 per cent of the men and 68 per cent of the women, even though the later terms had been intensively promoted in a decade of family planning communication activities. (5, p. 26)

and possible modification, such terminology can be more easily utilized to communicate the desired meaning than the haphazard, spontaneous and accidental approach followed in the past. Clearly, the procedures we advocate are too late in the 49 less developed countries which already have national family planning programmes or policies, or both, but they could be important in the remaining countries of Latin America, Africa and Asia that have not yet launched family planning programmes.

A logical place to begin in selecting a sociolinguistically correct approach to the naming of "family planning" in any given language group is with the words that traditionally have been used for the idea of contraception. ^{15/} Such words seem to exist in almost every language.

For instance, although "keluarga berentjana" is the official terminology for "family planning" in Indonesia, and is displayed on billboards throughout the nation, few clients use these words when they request contraceptive services at a clinic. For instance, in rural areas of East Java, clients usually request "mati las" (dead seeds) when asking for family planning. This choice of words hardly seems to have a favourable connotation, but it at least suggests a starting place in choosing the most appropriate word-symbols for "family planning" in Indonesia. Any new idea is interpreted and evaluated by receivers in the light of existing practice and of the old ideas that the innovation replaces. This obvious fact has been ignored in family planning programmes throughout the world. Not only is little known about the terminology used for traditional family planning methods, we are even quite ignorant about what such methods are.

The assumption of national family planning programmes seems to have been that traditional contraceptive methods and traditional health practitioners (such as midwives and herbalists) must quickly be replaced by "modern" medicine. Certainly in the case of the terminology of family planning, we see an illustration that the traditional antecedents should not be ignored, but should first be understood, and then built upon.

We conclude this discussion with generalization 1: Rather than making a direct translation of the English words "family planning" into various languages, we should begin with the traditional terminology for this concept in a given language and select the most appropriate word-symbols on the basis of an investigation of their meanings to the client audience.

Family planning methods

The terms used for specific family planning methods are subject to similar problems (to those for the concept of family planning) of unintended perception by mass audiences.

^{15/} We may even gain sociolinguistic understanding from the joking words used for family planning. For instance, the humorous expression in the Philippines (in Tagalog) is "pagpipigil sa pang-gigigil, "the control of teeth-grinding".

1. Condom

The "condom" is named after Dr. Condom, the medical doctor who supposedly invented it while a court physician to the British King Charles II (1660-1685). It is a word that conveys negative feelings to most people in less developed countries, as they associate it with prostitution.^{16/} Further, many medical doctors and other family planning officials, perhaps reflecting a distaste for condoms not fully shared by their less educated clients, fail to emphasize the use of condoms for their clients. In fact, condoms are often officially referred to as "conventionals" (along with foam and foaming tables), a euphemism of properly vague meaning. Nevertheless, condoms have been a part (usually a small part) of most national family planning programmes. However, in India and Pakistan condoms receive major emphasis as a child-spacing method, especially for young couples.

Starting in 1968, the Government of India conducted a huge advertising and marketing campaign for condoms. As a first step, after extensive pre-testing of terms, the condom was re-named "Nirodh," a rarely-used Sanskrit word meaning "protection." It was only intended that Government-produced condoms would be called Nirodh, but soon all condoms in India were known as Nirodh, whatever their source or channel of marketing.^{17/} And "Nirodh" seems to have become a much more socially acceptable word than "condom", partly owing to the massive advertising campaign, claimed to be the largest new product communication effort ever launched in India. The communication tactics for Nirodh illustrate a sociolinguistically correct approach to family planning, in that the word-symbol was selected through social research so as to elicit a favourable image in the minds of the intended audience. Then a communication campaign was conducted to spread this image and encourage adoption of the innovation. Nirodh purchases increased from 1.5 to 6.0 million pieces per month from 1970 to 1971.

In Pakistan, the Urdu word "*ghusbare*" is sometimes used, and condoms are referred to as "*paribar parikalpona gowish*" ("family planning material"), or else as "*rubbert*" ("rubber") in Bengali. The sophisticates may call condoms "*Sultans*" after a popular trade name; the case is similar in the Republic of Korea, where condoms are called "*Sacku*," a widely sold Japanese brand.

In Indonesia, condoms are called "*kondom*" "*karet*" ("rubber") or "*karet sarung*" ("rubber wrapper"). In Afghanistan, condoms are "*condom*," "*rubber*," or "*posh*" ("cover"). In Thailand, "*tung yang anamai*" (bag for health) and in the Philippines, the term is "*supot na gama*" (bag of rubber).

The sociolinguistic situation for condoms is different from that for the concept of family planning, as the idea of condoms is widely known in most societies, while family planning is a newly, or at least recently introduced idea. Nevertheless, the experience with "Nirodh" in India suggests that the sociolinguistic approach to naming that we advocated earlier for the new concept of family

^{16/} And also to audiences in more developed countries. About two-thirds of a sample of Australian *post partum* women, for example, perceived condoms as "repulsive".

^{17/} Thus Nirodh became the generic label for its types of product, as in the case of Aspirin and Kleenex.

planning, can also be applied to a specific family planning method that is an accustomed part of the culture.

2. IUD

When the IUD came on the centre stage of the family planning movement in the mid-1960s, many experts held high hopes that it would rapidly reach high levels of adoption. The IUD has many characteristics that led to such high expectations; it is extremely inexpensive (only a few cents for the plastic material), involves only a one-time decision by the adopter, is easily reversible (by removal), and can be inserted by paramedical personnel (such as nurses, for instance).

Unfortunately, while millions of women today wear the IUD and are thus protected from unwanted pregnancy, this family planning technique has also yielded its share of disappointments. First, many women experienced bleeding, pain or other side-effects. Many doctors and other family planning staff had been remiss in warning their clients about possible complications. IUD insertions were not adequately followed up by family planning personnel through visits to the adopters, so that many women, not knowing how to interpret these strange reactions, removed their IUDs or returned to the clinic requesting that the device be removed.

In many countries, rumours about the IUD spread rapidly through the public, leading to more discontinuances of the innovation. One study in New Delhi showed that such rumours frequently started with traditional midwives who stood to lose part of their income from delivering births if the IUD were successful.^{18/}

The net result of these problems is that, by the 1970s, in many countries, such as India, Pakistan and the Republic of Korea, there were as many removals of IUDs as new insertions. However, in some countries, rather substantial levels of IUD adoption have been achieved (up to 15 or 20 per cent of fertile married women) and, in others, where family planning programmes began more recently, the IUD is still a key method in the programme.

One of the possible reasons for the unfulfilled expectations as to the IUD's rates of adoption may be what it is called in various languages. Frequently an English word or English initials are used, leading to it a connotation of foreignness in most of the less developed nations. In other cases, the IUD may be referred to as "plastic" or "plastic coil" or "plastic thread"; in these cases the word "plastic" may lend an air of artificiality or unnaturalness to the IUD. When the IUD is called an "intra-uterine device" (or a similar term), one wonders how well these medically precise words communicate to village audiences who do not know what "uterus" means, and in any event, do not use that word for it.

In the 1970 family planning communication campaign in Isfahan, Iran, the IUD was called "halgheh" ("ring"). This term was pre-tested with a small sample of clients and seemed to have an appropriate meaning for them. But when "halgheh" was promoted in radio spots, the Ministry of Health personnel became aware that it also was a crude word for homosexual!

^{18/} An unpublished investigation by the Central Family Planning Institute, New Delhi, in 1967.

In India, the English word "loop" is widely used for the IUD. In the Republic of Korea, it is "loopu;" In Indonesia, "coil," "plastik," or, more commonly, "spiral." All such terms refer to the shape or material of the IUD and have a foreign connotation because of the English word-symbols.

In Pakistan, Ahmad (5, p. 23) found that only 2 per cent of his elite respondents understood the word "IUD"; 76 per cent of the females understood the Urdu word for "ring" as IUD. Others used the English words "ring" or "plastic coil," or else called the IUD "thread" or "plastic thread" in Urdu (presumably because of the plastic-removal thread that may be visible after insertion). In Thailand, the IUD is called "huang," meaning "a small curved shape used for connecting things." In Afghanistan, the IUD is "samon" (a "thing" or "device"), or "loop".

In conclusion, one might wonder how a more unfortunate choice of words could have been made for the IUD. The author knows of no case where the word-symbols were selected with much attention to the meanings to the intended audience of potential adopters.

3. Sterilization

Vasectomy is an operation to sever the *vas deferens*, a small tube which originates in the testes and conducts sperms to the seminal vesicles and ejaculatory ducts. Vasectomy renders the man sterile, although it does not affect his ability to have intercourse.

Male sterilization is one of the most important family planning methods in India, Bangladesh and the Republic of Korea, but has relatively few adopters in most other countries. The operation requires only about 10 minutes and the patient can walk away from the operating table, although he is urged not to return to manual work for a few days. Vasectomies are performed in doctors' offices, clinics or hospitals, mobile clinics, and in improvised facilities in tents or railroad stations (in India). The operation must be performed by a medical doctor who has had a brief training course in vasectomy techniques. Vasectomy can be "undone" by a recanalization operation, but requests for this second operation are rare in India and Bangladesh. Vasectomy is an effective contraceptive only to the extent of marital fidelity by the wife.

As in the case of other family planning methods, the word-symbols for vasectomy seem to affect the rate of adoption of this innovation. Vasectomy is called "nas bandi" (damming a small vein) in India and Pakistan, or else the English words "male operation" are used. The different perceptions of "nas bandi" versus "operation" are illustrated by the Indian peasant who asked a doctor to give him a "nas bandi", not an operation. Many villagers perceive "operation" as a more fearful and serious experience, and are less likely to decide in favour of it. In the Republic of Korea, vasectomy is known as "chong wan seesu" or "vas operation", so vasectomy is perceived as an operation there.

Unfortunately, there often is an association between vasectomy and castration in the minds of villagers. In India and Pakistan, they occasionally refer to vasectomy with the word used for the castration of bull calves. This confusion was important enough in West Pakistan in 1970 for the government family

planning programme to publish a leaflet describing the difference in the two operations.

In Thailand, the most commonly-used Thai word for "vasectomy" (pronounced "torn") also means "castration". Small wonder that very few men come forward for the operation, even though about 22,000 women had tubectomies, for which the Thai word, "tam mun ying", is different from that for male sterilization.^{19/}

The female operation that is parallel to vasectomy is called "tubectomy", "tubal ligation," or "salpingectomy" in medical terminology. In India, it is commonly referred to as "operation" or "tubectomy", using English words, or "surat (woman's) ka (operation)". While less popular than vasectomy in India and Bangladesh, tubectomy began to increase in the early 1970s, perhaps because, in these male-oriented cultures, husbands prefer that the wife have the operation.

Usually, tubectomy necessitates an abdominal operation, followed by hospitalization of the patient for about six or seven days, although this is sometimes only two or three days. So the adoption of tubectomy, unlike vasectomy, is more of a public than a private decision. In most developing countries, where hospital beds are in extremely short supply, tubectomy may never reach the popularity of vasectomy, but, at least, it will not be confused with castration.

4. The pill

The development of hormone-like compounds that temporarily suppress ovulation in normal women is probably one of the most important medical advances of recent times. Dr. John Rook and his associates are credited with the research leading to the development of the pill. The first field trials began in Puerto Rico in 1956, and the pill was available for general use in the United States a year later. Since then it has become the most popular contraceptive in the United States, and its use is currently increasing in many less developed countries, where it has generally been introduced only in the past few years.

Problems with such side-effects as weight gain, nausea and irregularities in bleeding have set back rates of adoption somewhat. In February 1970, nationally televised United States congressional hearings were held on the pill, and many women discontinued the innovation upon hearing the ominous listing of side-effects that could occur, including an increased probability of cancer.

The side-effects, or rumours about them, can lead to high drop-out rates, especially in less-developed countries where the motivation to contracept may be relatively weaker, where women are less sophisticated in understanding the pill's effects, and where poorer nutrition and smaller body size may conceivably lead to more side-effects.

For example, 43 per cent of a sample of 300 Pakistani women discontinued

^{19/} Actually, "*tam mun chai*" (meaning "to make the man infertile") can be used in Thai for vasectomy, but this expression is not popular.

the pill within one year of adoption (7, p. 34).^{20/} One reason for high discontinuance was the cultural incompatibility of daily pill-taking. About half of the dropouts reported that the routine of taking a pill every day was troublesome.

In north India, Hindi speakers call oral contraceptives "golea" (pill), or they use the English word "pill". In Pakistan, the oral pill is called "khaneki (eating) goli (round tablet)" in Urdu;^{21/} In Bangladesh, "khawar (eating) bori (pills);" in Malaysia, "macan pil peranchang keluarga" (family planning pills for eating); and in the Philippines, "gamot para hindi mag-anak" (pills for not having children.) Orals are thus distinguished from foaming tablets by implying they are "pills for eating". In Indonesia, oral contraceptives are "pils", a Dutch word (while foaming tablets are called "tablet busa", "foam tablets", or "sampoon"). In Afghanistan, orals are "goolii"; (a round pill), "pills", or "tablets". Similarly, orals are called "la pildora" (the pill) in Spanish, and this word is also used in the Philippines.

It is not necessary to call oral contraceptives a word that means "pill" in other languages just because it is referred to as "pill" in English. In Thai, a special expression was coined for oral contraceptives; "ya kum", meaning "preventive medication".

The linguistically related perception of oral contraceptives as a curative pill, similar to aspirins, may also lead to another explanation of the relatively high rates of discontinuance in some countries. For example, in Pakistan, village women consider both aspirins, and now contraceptive pills, as "hot" in their traditional classification of all foods and drinks as "hot" or "cold".^{22/} Hotness or coldness of consumed items is closely linked to health and illness. Pakistani women consider contraceptive pills as "hot", so they cannot be taken when one has a head cold or any other illness. The result, especially in winter months: discontinuance of the pills.

A number of ingenious solutions to the pill-counting problem have been tried, and often found wanting. At least the perfect solution has not been found. One method is to package the 21 hormone pills along with 7 placebos (usually vitamin or iron pills), so that the illiterate women can be instructed simply to take one pill a day for 21 days, followed by 7 days of different coloured placebos. While taking the latter, menses occurs. The 28-day cycles of pills are most frequent in less developed countries, although 21-day cycles are mostly used in the United States where numerical ability is assumed.

^{20/} Most of the pill drop-outs in Pakistan occurred in the first months of adoption; 52 per cent of the drop-outs occurred in the first month, and 74 per cent in the first three months of use. Results in other developing countries are similar. The implication for family planning programmes is plain: *Pill adopters require considerable follow-up by change agents and these follow-up contacts should be concentrated in the first months after adoption.*

^{21/} Ahmad reports that 28 per cent of his Urdu-speaking female sample understood this word for oral pills, but none of his male respondents. (5, p. 34)

^{22/} This indigenous hot-cold complex is independent of the actual temperature of the material; for instance, pigeon meat is considered very hot in Pakistan, while legumes are cold, whether they are cooked or not. Some kind of hot-cold classification exists through Latin America, Africa, and Asia, and has frequently been found to be a perceptual block to such public health campaigns as water-boiling for disease prevention (Rogers with Shoemaker, 1971).

Another attempted solution was tried in the so-called "moon phase" study in selected Pakistan villages (8). Here, local cultural beliefs include a holiday on the eleventh day of the moon (the first day is counted from the first appearance of the moon as a tiny sliver), called "gharvheen", which is celebrated by passing candy to friends. So even illiterate peasant women who cannot use a calendar are able to follow the phases of the moon. The researchers utilized this fact by giving a sample of women a short course of 12 pills beginning on gharvheen. These women all experienced withdrawal bleeding when the medication was discontinued after the twelfth day. On the first day of the new moon, a regular 21-pill cycle was started, and the women were instructed to take one pill a day until the cycle was completed. Thus, they all experienced withdrawal bleeding during the dark of the moon. The drop-out rate of 47 per cent was considered a favourable result by the researchers, although they acknowledge that it may have partly been due to the social support given during the monthly visits by a paramedical aide, as well as to the recycling of the menses to coincide with the moon-phasing.

Hormonal contraceptives can also be administered to women as injections once a month or once in three months, eliminating the necessity for accurately counting the days.^{23/} In fact, most national family planning programmes in Asia emphasize the IUD much more than the pill, because of fear of the high rate of discontinuance of the later. For instance, in Indonesia, the system of diffusion incentives are set so that field staff receive higher payments for each IUD adoption (even though the IUD's rate of discontinuance is no great cause for happiness in most countries).

This discussion of the sociolinguistic aspects of the pill may be summarized with generalization 2: The relatively high rates of discontinuance for oral contraceptives are related to the meanings associated with the word-symbols used for this innovation in various languages. We feel that the terminology used for the pill represents a most unfortunate choice of words, and associated meanings. Many of the ensuing problems with pill discontinuance stem from the slavish (usually thoughtless) translation from the English "pill" to word-symbols implying curative medication. This is unnecessary, as is perhaps illustrated by the case of Ireland, where oral pills are called "cycle regulators" (a euphemism intended to avoid religious and legal restrictions to the "pill").

A further example comes from a sociolinguistic investigation in the Philippines, by Dr. Juan Flavio of the International Institute for Rural Reconstruction (IIRR). In order to maximize the meaningfulness of family planning methods to villagers, they are labelled and explained by change agents in analogies that are already familiar. For instance, Filipino peasants think that seeds from the "iping-iping" tree, if eaten by laying hens, cut down on their egg production. So IIRR change agents draw the analogy to oral pills and Flavio has even experimented with colouring them brown, so that they look like the "iping-iping"

^{23/} Although not yet approved for widespread use, contraceptive injections are undergoing field testing in many developing countries. Most villagers place an extremely high faith in injections as a health technique, perhaps because of the demonstrated past effectiveness of penicillin shots in curing various infections.

- seeds!^{24/} Some medical doctors are dubious of this approach on professional grounds, but it is certainly a sound communication strategy. It is a receiver-based approach, starting with the familiar and making family planning ideas compatible with previous beliefs. For too long in the case of family planning, we have been source-oriented or message-oriented. And our signal lack of general success in family planning programmes, high rates of discontinuance, and plateaus in rates of adoption, all suggest that English-based, medically oriented word-symbols are a sociolinguistic mistake. We see this especially in the case of the pill.

5. Abortion

“Abortion is a very important method of family limitation in many places. It well may be the most widely used single method in the world today.” (9, p. 819) However, only in recent years has it been recognized that abortion is, in a sense, a method of “family planning”. And the world-wide social movement under way in the late 1960s and early 1970s to liberalize abortion laws is likely to have important consequences for family planning programmes. In fact, abortion was the main method used in lowering the birth rate in Japan, in certain socialist countries, such as Hungary and Romania, (10) and more recently, perhaps in the Republic of Korea (Worth and others, 1971).

Abortion is still illegal in almost all less developed countries, ^{25/} although it is frequently practised. Reliable estimates are not available, but as many as 20 - 25 per cent of all pregnancies may end in abortion. In Seoul, Republic of Korea, there is an astounding rate of 3.2 abortions per married woman (Worth and others, 1971).^{26/} In the United States, there are an estimated one million abortions per year, mostly illegal (12) Often, it is difficult to distinguish between spontaneous and induced abortion; in fact, there is only one word in Indonesian (and in numerous other languages) for both.

In the United States, most abortions are performed by medical doctors. However, village women have most of their induced abortions at the hands of village midwives, who use herbs, massage and/or sharp instruments. Infection or haemorrhage is not uncommon.

Because of its illegal status, and taboo nature, abortion has many euphemisms in various countries. In Pakistan and India, abortion is often called “wasted pregnancy”. In Hindi, north Indian village women refer to abortion as “baccha girana” (literally, “making the baby fall out”), or as “baccha jata raha” (“losing an unborn child”). A somewhat similar euphemism for abortion is used by low-income black women in Baltimore: ‘Bringing down the period’ (13).

^{24/} Somewhat similarly, in the Caribbean Island of St. Lucia, the Planned Parenthood Association features posters that state: “You space your banana trees; why not your children?” These posters are tacked up on palm trees along main roads all over the country.

^{25/} Although a law designed to liberalize abortion procedures was enacted in Singapore in 1969, and in India in 1971.

^{26/} The proportion of married women aged 20-44 years in Seoul who have had an abortion rose from 25 per cent in 1964 to 43 per cent in 1970 (11) Two-thirds of abortees did not realize it was illegal, but three-fourths of them “disapproved” of abortion.

A vast underground network of interpersonal communication channels exists for women who are searching for an abortionist, as Lee's (1969) study shows in the United States. The taboo nature of abortion meant that the mass media could not carry abortion information, nor could most institutionalized health sources (such as medical doctors and hospitals) supply it. Further, such taboo communication is usually with extremely homophyllous peers, who are connected with each other in interlocking networks, so what these intimate friends are likely to know about abortion is highly redundant. Nevertheless, Lee's respondents found an abortionist after only asking an average of about five others. Once a woman was successful in finding an abortionist, she was then a useful source for other women. During the four years following her abortion, the average American woman was asked for help by 200 others! Lee found that certain individuals, whom she called "abortion information specialists", were perceived by others as likely to be helpful, and they were especially likely to disclose their need for an abortionist to them.

These data suggest that the taboo nature of abortion acts to restrict and impede the flow of information about it. If taboo communication is to be facilitated, one strategy is to make the topic less taboo. How can this be done?

One way is to re-label the taboo topic with different word-symbols. The perceptions held of a taboo are greatly influenced by the word-symbols used to refer to the taboo. So when "condoms" in India were re-labelled "nirodh", interpersonal communication about this formerly taboo topic was made freely.

Prostaglandins are a type of body chemical that acts as an abortifacient, the so-called "morning-after pill". This promising post-conceptive method is now undergoing widespread testing, and it may some day be available for inclusion in family planning programmes. Its medical label clearly cannot be used in eventual diffusion campaigns. If it is called an "abortant", its diffusion will certainly face stiff resistance. Now is the time, while the drug is undergoing bio-medical testing, to test possible verbal names for it in various languages. For instance, someone has suggested that prostaglandins might be called "menstruation-inducers".

The taboo nature of abortion in many cultures may be eased somewhat when it gains legal status, but public opinion will tend to remain opposed as long as the word "abortion" is used. Hardin (1968) argues that it is a semantic mistake to speak of the problem of "permissive abortion", at least in the United States where state legislatures are seeking to establish certain conditions where abortion is permissible (as in the case of rape). Instead, Hardin feels the problem is one of "compulsory pregnancy", the inverse of permissive abortion, where the state insists that the woman does not have full authority to decide whether to terminate her own pregnancy. Would not drives for abortion legal reform be more successful if they could re-label the issues as the removal of "compulsory pregnancy"?

We conclude this discussion with generalization 3: Taboo communication can be facilitated by re-labelling the taboo topic with different word-symbols.

The Nomenclature of Human Reproduction

Family planning workers must use such words as intercourse, menstruation, and uterus when explaining family planning methods to their clients. Generally, they must adopt the euphemisms and other expressions used by their clients, rather than medically correct terminology, if they are to communicate effectively. Because sexually loaded words may frequently be taboo or embarrassing to clients, the expressions used are often obtuse and indirect, causing special communication problems for change agents who must deal somewhat more directly with these terms, in selecting the most appropriate terminology for the concept of family planning and for various family planning methods. These words are likely to be utilized in mass media messages about family planning. However, the expressions for menstruation, orgasm, semen, and intercourse are unlikely to be used in mass media channels. Hence they do not need the high degree of standardization necessary for a mass audience. However, this fact usually complicates the linguistic problem of the change agent even further. He must develop his own lexicon for human reproduction,^{27/} and, further, he must be able to vary this vocabulary somewhat for each client. Often one term is used with women, but a different word for the same phenomenon must be utilized with male clients. So the semantic problems outlined earlier for "family planning" and for various contraceptive methods, are often compounded considerably in the case of the terminology used for human reproduction.

Conclusions

One of the main conclusions of this paper, in addition to the need for future investigation, is expressed as generalization 4: Our lack of understanding of the semantics of family planning limits the effectiveness of family planning communication activities. In other words, because we do not know how our word-symbols are perceived by our audience, we limit our success. We argue that the sociolinguistic aspects of family planning word-symbols are one crucial dimension of that journalistic adage: "to know your audience". This is a difficult goal because the communication sources have trouble in sensing the ways that their less-educated clients perceive their message symbols. Usually, the sources speak with one vocabulary of family planning word-symbols, while their heterophyllous audience listens with a different lexicon. When source and receiver are markedly dissimilar, the meanings of message symbols will be different for the audience and for the communicator.

We advocate an approach in which several possible words are tentatively selected for a family planning concept. These are then pre-tested with a sample of the audience, and further modifications may be required, leading to a final selection. In such a receiver-oriented and empirical approach, a word-symbol is chosen that has the desired meaning to the audience. This approach is illustrated by the case of "Nirodh" in India. Words are important because an individual's language determines what he sees and what he perceives (the Whorf-Sapir hypothesis).

^{27/} That is, he cannot simply borrow it wholesale from the official terminology used on posters, pamphlets, and the like.

Table 1. Word-symbols used for “family planning” in selected languages

Country or region	Language	Word-symbols for “family planning”	Approximate meaning of the words
1. Afghanistan	Dari	Rahnomaya khanawada	Guidance of the extended family
2. Bangladesh	Bengali	Poribar porikolpona	Kinship planning _a /
3. India (northern)	Hindi	Parivar niyojan	Kinship planning _a /
4. India (southern)	Telugu	Kutumba niyantrana	Kinship planning _a /
5. Indonesia	Indonesia	Keluarga berentjana	Planning _a / the related individuals who live together in a single household
6. Malaysia	Malaysian	Peranchang keluarga	Planning _a / the kin
7. Pakistan	Urdu	Khandani munsubha bandi	Extended family plan _a / fixing
8. Philippines	Tagalog	Pagpaplano ng pamilya	Planning the family
9. Korea,	Korean	Kajok kei wheik	Kinship (household) plan _a /
10. Thailand	Thai	Wangpan krobkrova	Thinking ahead about the relatives living in one's own household

a/ Planning in an aggregate, national sense, rather than by an individual or family.

Three specific generalizations have been described in this paper.

1. Rather than making a direct translation of the English words "family planning" into various languages, we should begin with the traditional terminology for the concept in a given language, and select the most appropriate word-symbols on the basis of an investigation of their meanings to the client audience.

2. The relatively high rates of discontinuance for oral contraceptives are related to the meanings associated with the word symbols used for this innovation in various languages.

3. Taboo communication can be facilitated by re-labelling the taboo topic with different word-symbols.

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DEMOGRAPHIC TRAINING AND EMPLOYMENT OPPORTUNITIES*

by

The International Union for the Scientific Study of Population

For some time the Council of the International Union for the Scientific Study of Population has felt that the Union should be more involved in improving the level of demographic training throughout the world, and in 1969 the Council decided to establish a committee under the chairmanship of Professor D.V. Glass to study ways in which this could be done. The project obtained the financial support of the Population Council and the committee held its first meeting in London in December 1970. The work programme drawn up at this meeting included the undertaking of a world-wide survey of persons who had received demographic training at a post-graduate level. Its aim was to find out the use they were making of this training and its adequacy in relation to the work in which they were engaged.

Organization and conduct of the survey

It was decided to include only those persons who had completed at least one year's post-graduate training by 1967. These respondents would have had several years' working experience on which to base an evaluation of their training, and, in addition, the number of training programmes in existence prior to this date was small enough to allow complete coverage of the students trained.

According to the information available, 25 training centres were located which had been providing post-graduate demographic training before 1967 and had trained a total of about 1,200 demographers by that date. The questionnaire was pre-tested on the past students of the London School of Economics and the Institute of Demography, University of Paris. On the basis of the results of the pre-test the questionnaire was finalized and despatched in French, English and Spanish in July 1971. A second copy, with a reminder, was sent in October 1971 and these two rounds produced a total of 520 replies. One last effort to improve the response was made by enlisting the help of the directors. Each was asked to write to his former students expressing his interest in the survey and stressing its importance for the future of demographic training. This proved quite successful and questionnaires are still arriving. The results detailed below, however, are based only on the first 550 questionnaires received. No cross-analysis has yet been undertaken and so the results given are based on straightforward tabulations of the variables surveyed. Although we should like to have placed special emphasis on the Asian demographers in this report, this has regrettably not been possible with the data in their present form.

The 550 respondents on whose replies these findings are based, are distri-

* The opinions expressed in this paper are the author's own and do not necessarily reflect the views of the ECAFE secretariat or of the United Nations.

buted among the various training centres, as shown in table 1. The wide variation in numbers means, of course, that the results are heavily biased in favour of those training centres with the largest number of replies. At a later stage separate analyses will be made for individual centres with 15 respondents or more.

Results

(i) General characteristics

Sex: We neglected to ask for the respondents' sex to be indicated on the questionnaire but in most cases this was apparent from the name. Of the 550 replies, 436 (approximately 79 per cent) were males, 81 (15 per cent) were female and the sex of the remaining 33 (6 per cent) was not absolutely clear from the name.

Nationality and country of work: The respondents came from 57 countries, the majority being nationals of the United States (211), India (74) and France (43) (see table 2). This is not surprising, considering that the biggest training centres surveyed (with the exception of the Cairo centre) were in these countries and most trainees (337 or 61.2 per cent) had received at least part of their post-graduate demographic training in their home countries. Of the 550 respondents, 247 were from the so-called "developing regions" of Africa, Asia and Latin America, and 299 were from developed countries. The remaining 4 did not give their nationality. There were 15 fewer demographers working in the developing regions than the number of persons trained from these areas. Although it is impossible to draw conclusions without a cross-tabulation of nationality by country of work, the figures appear to suggest that a number of Asian, particularly Indian, demographers are working in Canada and the United States and that their loss from the developing regions is partly compensated for by Europeans (Belgians, British and French) working in developing countries.

(ii) Current employment

In answer to the question "Do you currently hold a post which includes demographic work?", 458 (83 per cent) replied "Yes" and the remainder "No". This appears at first sight to be a very high proportion of persons still working in the field, but from subsequent questions it seems that in many cases the actual amount of demographic work included in the job is relatively small. The 92 persons whose current job included no demographic work at all were asked their reasons for no longer working in the field and the results are given in table 3. It is noteworthy that the reason given by the greatest number of people (26 per cent), that of "demography never having been a primary interest" was not one of those listed on the questionnaire but one given in "other". It would be interesting to find out why these people had taken post-graduate training courses in demography and what their main field of study had been. The next most important reasons were "unable to obtain demographic employment" (17 per cent) and "not working at all" (16 per cent).

Persons whose jobs still included demographic work were distributed as shown in table 4. By far the biggest employers of demographers appear to be the universities and colleges which employ almost half the respondents who still

work in the field. It should be noted, however, that the high proportion of persons working in the United States, where most demographers are employed by universities, has considerably influenced this result.

The second largest percentage (29 per cent) work for government departments, over half of them being in national statistical offices or census bureaux. Within the universities and colleges, almost half (48 per cent) of the respondents are in departments of sociology, a further third (33 per cent) in demographic research centres or departments of demography, and the remainder in departments of economics (10 per cent), statistics or mathematics (4 per cent) and other (5 per cent).

It was surprising to note that most respondents had been in their current jobs for a relatively short time (see table 5)-almost a quarter for two years or less and over half for five years or less. Only one-fifth had been in their jobs for more than ten years. One possible explanation for this may be the short length of time since respondents completed their studies, but as will be seen when the employment histories of respondents who have held more than one job are examined, the average length of time spent in demographic jobs does seem to be rather low.

(iii) Additional demographic activities

In addition to their main employment, 172 respondents (just over a third) were carrying out additional demographic work on a part-time basis for other organizations; 122 respondents had just one such additional activity; 31 had two and the remaining 19 had three. Again, the universities and colleges were the biggest employers (see table 6), although not to the same extent as in the primary occupation. Government departments employed a similar percentage and the only other real difference in the pattern is an increase in the percentage in "other" employment; this is mainly accounted for by demographic publications and professional associations (table 6). Ninety per cent of the work undertaken in these additional jobs was in the categories of teaching, research and consultancy. The distribution is shown in table 7.

As can be seen from table 8 only two of the persons carrying out additional demographic work spent more than 50 per cent of their time on this work, and the majority spent less than one-fifth.

(iv) Previous demographic employment

A total of 331 respondents had been engaged in demographic work prior to their present job. Of these, the majority (199) had had only one previous employer, 81 had had two, 30 had had 3, 17 four and 3 five or more; one did not give the number. Here the short duration of the job was even more apparent than with current employment. Respondents were asked to state the longest time they had stayed in any one job and the results were as follows:

	Number	Percentage	Cumulative percentage
Under six months	5	2	2
Six months or one year	8	2	4
1 or 2 years	120	36	40
3-5 years	117	35	75
6-10 years	54	16	91
Over 10 years	20	6	97
Unclear	4	1	
No answer	3	1	
Total	331	100	

Forty per cent had never stayed longer than two years in a job and 75 per cent had stayed five years or less. Again, the distribution by employers followed a similar pattern, as shown in table 9.

As for their secondary demographic activities, respondents were asked what type of work they had been doing in their previous jobs. Over half (55 per cent) had been engaged primarily in research (table 10), with a further 18 per cent in teaching and research. Only 12 per cent were involved mainly in teaching. It is likely from other answers not yet fully analysed that this last percentage would be much higher for current employment, an indication of the growing importance attached to demographic training. Consultancy was much less common as a full-time occupation than as a secondary activity (7 per cent as opposed to 27 per cent), as indeed one would expect.

(v) Employment opportunities for demographers

Current opportunities: Respondents were asked their opinion of employment opportunities for demographers both in their home country and in the country in which they work. The results are given in table 11. All that can be drawn from the figures, without information on the countries to which they refer and the number of respondents working abroad, is that most demographers seem fairly happy with their employment prospects—around 40 per cent think that they are in short supply, a further 30 per cent think that supply roughly equals demand and only some 10 per cent think that there are more demographers than there are jobs.

As might be expected, respondents also think that prospects are slightly better in the countries in which they work than in their home countries. We should expect this differential to be even greater for persons working abroad.

Future prospects: When asked their opinion of future prospects there was almost no difference between the replies on home country and those on country of work (see table 12). Almost 70 per cent thought that the number of jobs for demographers would increase and 20 per cent thought that the increase would be quite large. A further quarter, however, thought that there would be a cut-back in the number of jobs, but only about 10 per cent thought this reduction would be considerable. Around 15 per cent considered that the number of jobs would remain fairly constant.

(vi) Research activities

Main fields of study: 451 respondents said that their work included some research, and they were asked which fields this research covered. The results are given in table 13. The most popular topic was fertility, on which 174 persons (39 per cent) spent a large part of their time. A further 33 per cent spent some time on this subject and only 2 per cent said that their research did not touch on fertility at all. Other widely studied topics were internal migration (23 per cent spending a large part and 35 per cent a small part of their time), urbanization and regional planning (22 per cent and 28 per cent), manpower and employment (20 and 36 per cent) and population and economic growth (19 and 38 per cent). The subjects on which fewest persons appeared to be doing research were nuptiality, international migration, historical demography, demographic aspects of public health, and population and food supply.

From the first section of the table, dealing with methodology, it is perhaps surprising to note that 34 per cent of people working in research devote a large part of their time to methods of demographic data collection, with a further 32 per cent spending some time on this. One third of these research workers spend a large part of their time on demographic analysis and another two fifths also use this in their work. Although only 10 per cent spend much time on population mathematics, 28 per cent use statistical analysis to a large extent. Another interesting fact is that 60 per cent of persons engaged in research spend at least some of their time on population projections. As will be seen when examining respondents' judgement of their training, many of them feel that their training in the latter two subjects (statistical analysis and population projections) has been inadequate.

(vii) Use of journals and textbooks

We thought it would be interesting to find out to what extent demographers used the available journals and textbooks and they were asked to list up to five of each to which they referred frequently in their work. The journals are listed in table 14. Those most widely used were, as expected, *Demography*, published by the Population Association of America, and *Population Studies*, published by the Population Investigation Committee of the London School of Economics. These journals are used by 65 per cent and 55 per cent respectively of persons engaged in research. It is perhaps surprising that the third most popular journal was *Population*, published by the Institut National des Etudes Demographiques, Paris, which was read by 28 per cent of our respondents, far more than the proportion whose first language is French. The next most widely used journals were those dealing with sociology, statistics, economics and public health. The fact that those most frequently mentioned were published in the United States is probably a result of so many of our respondents either being American by nationality or working there.

Far less use was made of textbooks than of journals. Only one book—Barclay's *Techniques of Population Analysis*—was used by more than one-third of the people working in research (34 per cent) and only another five were used by more than 10 per cent. They were *The Study of Population* by Hauser and Duncan, *Introduction to Demography* by Spiegelman, *Principles of Demography*

by Bogue, *Analyse Demographique* by Pressat and the United Nations publication *Determinants and Consequences of Population Trends*. Other books used by 5 per cent or more of people working in research are listed in table 15.

In general, far less use is made of textbooks in teaching than in research, but the most commonly used books tend to be roughly the same ones for both purposes. Barclay's book on techniques of analysis is again the most widely used and all except one of the nine books used for most training courses appear in the first nine listed for research, though in slightly different order.

Other subjects taught: Most people engaged in demographic training taught other subjects besides demography. Again, the most common subject was sociology, which was taught by 43 per cent of persons who taught demography; 27 per cent taught mathematics and 21 per cent methods of social research. Other popular topics were ecology and economics. Some respondents taught more than one of these additional subjects.

(viii) Qualifications of respondents

It is difficult, from the data in their present form, to construct a clear picture of the most common training histories of respondents. It is clear, however, that most of them come from a background of sociology, economics or mathematics and statistics. Other common first subjects are geography and public health.

Their general level of education is very high, almost half (276) having obtained Ph.D. degrees, and over 400 having reached at least the M.A. level. Unfortunately, the data in their present form do not tell us whether these high-level qualifications are in demography or in other subjects. In addition, it is often difficult to determine the content of a course from its title; for instance, qualifications in demography are often called degrees in sociology or economics.

From a question on the use of demographic textbooks during their own training, it emerged that Barclay was again the most popular; it was used by no less than 34 per cent of all respondents during their training, more than twice as frequently as any other book (see table 23). Again the nine most frequently used books were the same as those used by persons engaged in research. It is a little surprising that, although many of the demographers were trained 10 years ago or more, they are still using the same books as were current then. This seems to indicate a lack of good up-to-date demographic textbooks and this point was indeed made by respondents to one question which has not yet been analysed.

(ix) Adequacy of demographic training

One of the main purposes of the survey was to find out how well respondents felt that their demographic training was suited to the job they were doing. Their judgement on selected topics is given in table 24. It appears that their training was most satisfactory in the areas of demographic analysis and general substantive demography, although even for these topics only half of the respondents felt that their training had been very good. Roughly another two-fifths, however,

thought it had been adequate and only about 10 per cent thought it had been insufficient. Only a third of the respondents had received very good training in demographic data collection and 19 per cent felt that what they received had been insufficient (a notable deficiency considering that so many demographers spend a large part of their time on data collection). As pointed out earlier, a high proportion of the respondents are dissatisfied with their training in population projections. Over 20 per cent thought that it was insufficient and 4 per cent had received none at all. The topics with which the greatest numbers of persons were dissatisfied were: economics, for which 37 per cent of respondents felt their training had been insufficient, population policies and programmes (34 per cent), urbanization and town planning (32 per cent), and historical demography (31 per cent). Surprisingly, about a third of the trainees had received no training at all in the last two subjects.

After giving the above judgements on their training, respondents were asked to list the topics they felt should be emphasized in demographic training, and the topics they thought should be added to the courses they had attended. The results are given in tables 25 and 26. Most persons who answered this question thought, not surprisingly, that the most important topic in a training course should be demographic analysis; this was mentioned almost twice as often as any other topic. The other topics mentioned most frequently were, in order of importance, population policies and programmes, mathematics and statistics, economic aspects of population, sociological aspects and population projections. It is surprising that respondents placed so much emphasis on population policies and programmes and on economic aspects of the subject when so few of them appeared to work in these areas.

Far fewer persons suggested topics to be added to training courses. That most frequently mentioned was public health, in which 57 per cent had received no training at all and in which only 3 per cent thought their training had been very good. The other subjects suggested for addition were, in order, population policies and programmes, historical demography, evaluation of family planning programmes, town or regional planning, mathematical demography and economic demography.

Fifty-seven per cent of the respondents had received all their demographic training in their home countries and 34 per cent had received it abroad; 9 per cent had been trained both at home and abroad. Of those trained abroad, 81 per cent considered that the training was suitable for the work available in their home countries. Of those trained at home but working abroad, the proportion who felt their training was suitable was slightly higher (85 per cent).

In general, it appears that most respondents are fairly satisfied with their training, although there seem to be some areas, such as statistical and mathematical aspects, population projections, and interdisciplinary aspects, in which improvements could be made.

Summary

From the information available, it appeared that 25 institutions were providing post-graduate demographic training before 1967 and had trained a total of

about 1,200 demographers by that time. The results in this survey are based on replies from 550 of these. The majority of these demographers are still working in the field and are mainly employed by universities (predominately sociology departments) and government departments, particularly national statistical offices. In addition to their primary employment, many of them engage in secondary part-time activities of a demographic nature, the work they do consisting mainly of teaching, research and consultancy.

Demographers appear to be rather mobile and change their jobs at frequent intervals, sometimes as often as every two years. They tend to think that employment prospects in the field are good, and will improve over the next five years.

The most important research topic among demographers is fertility; other fields in which large numbers are conducting research are internal migration, urbanization and regional planning, manpower and employment, and population and economic growth. Not much research is being done on nuptiality, international migration or historical demography. The three journals most widely read by research workers are *Demography*, *Population Studies* and *Population*. The most frequently used textbook is Barclay.

Approximately half the persons working in demography included some teaching in their work. The majority of courses are of a general nature and are taught at first-degree level. The average number of students in a class is 35 and their main discipline is sociology. Roughly the same textbooks are used as for research, with Barclay again being the most popular. Most respondents teach other subjects besides demography, the most usual being sociology.

Most of the respondents are very well educated, almost half having obtained their Ph.D. degrees and over 80 per cent having reached the M.A. level. They are generally satisfied with their demographic training, including those trained abroad, although they feel that some improvements could be made, particularly in the fields of mathematics and statistics, population projections and interdisciplinary aspects.

Table 1. Distribution of respondents, by training centre

	Number of respondents
International Institute for Population Studies, India	85
Office of Population Research, Princeton University	64
Population Research Center, University of Chicago	57
Population Studies Center, University of Michigan	53
Institute for Demography, University of Paris	49
Population Studies Center, University of Pennsylvania	39
Population Studies and Training Center, Brown University	34
Latin American Demographic Centre, Santiago	32
Center for Studies in Demography and Ecology, Univ. of Washington	30
University of California, Berkeley	17
London School of Economics	15
Cairo Demographic Centre	15
Australian National University	15
Carolina Population Center, University of North Carolina	15
School of Public Health, Harvard University	9
International Population Program, Cornell University	8
Population Studies Program, Duke University	7
Social Science Research Center, University of the Punjab	5
Population Research Laboratory, University of Southern California	5
Colegio de Mexico	5
Indian Statistical Institute, Calcutta	5
University of Pittsburgh	4
Population Institute, University of the Philippines	4
Florida State University	3
University of Montreal	1
Total	576 <u>a/</u>

a/ The total is greater than 550 because some respondents had received demographic training in more than one of the centres.

Table 2. Distribution of respondents, by nationality and country of work.

Africa	Nationality	Country of Work
Chad		1
Ethiopia		1
Ghana	4	4
Guinea	1	
Ivory Coast		1
Kenya	1	2
Libya		1
Madagascar		1
Nigeria	3	2
Senegal		1
Sudan	1	1
Tunisia		4
Arab Republic of Egypt	14	9
Zaire	1	1
	<hr/>	<hr/>
	25	30
	<hr/>	<hr/>
North America		
Canada	14	35
United States	211	227
	<hr/>	<hr/>
	225	262
	<hr/>	<hr/>
South America		
Argentina	12	6
Bolivia	1	
Brazil	2	2
Chile	5	7
Colombia	5	5
Costa Rica	1	5
Dominian Republic	2	2
Ecuador		1
El Salvador	1	
Guadeloupe		1
Haiti	1	
Jamaica	2	
Mexico	8	6
Panama	3	2
Peru	2	4
Trinidad and Tobago	1	1
Uruguay	2	1
Venezuela	2	2
	<hr/>	<hr/>
	50	45
	<hr/>	<hr/>
	415	

Table 2. (continued)

Asia	Nationality	Country of Work
Burma	3	3
China	14	10
Cyprus	1	1
Hong Kong	2	2
India	74	52
Indonesia	5	6
Iran	6	5
Iraq		1
Israel	4	7
Japan	1u	10
Jordan	4	
Malaysia	1	3
Pakistan	12	10
Philippines	8	11
Republic of Korea	8	3
Republic of Viet-Nam	1	
Singapore	2	5
Sri Lanka	5	4
Syria	1	2
Thailand	7	14
Turkey	2	3
	<hr/>	<hr/>
	172	157
	<hr/>	<hr/>
Australasia		
Australia	5	7
New Zealand	1	
	<hr/>	<hr/>
	6	7
	<hr/>	<hr/>
Europe	2	2
	<hr/>	<hr/>
Yugoslavia	2	2
	<hr/>	<hr/>
Belgium	4	
France	43	32
Federal Republic of Germany	1	1
Italy	1	1
Norway	1	1
Spain	3	4
Sweden	1	1
Switzerland	1	
United Kingdom	11	7
	66	47
No answer	4	
	<hr/>	
Total	550	
	<hr/>	
	416	

Table 3. Reason for no longer working in demography

Reason for no longer working in demography	Number of persons	Percentage
Demography was never a primary interest	24	26
Unable to obtain demographic employment	16	17
Not working at all <u>a/</u>	15	16
No longer interested in demography	12	13
Working conditions (salary, promotion opportunities, etc.) for demographers are poor	8	9
Available demographic employment is not of a level suited to respondent's qualifications	4	4
Other	12	12
No answer	1	1
	—	—
Total	92	
	—	

a/ Housewives, students, and the like.

Table 4. Persons still working in demography, by type of employer

Employer	Number of respondents	Percentage
University or college	224	49
Government departments	134 <u>a/</u>	29
National statistical or census bureaux	73	16
Other	61	13
Research institutes	47	10
Demographic	12	3
Other	35	8
United Nations	29	6
Secretariat	7	2
Demographic training centres	18	4
Specialized agencies	4	1
Other international organizations	4	1
Foundations	9	2
Private companies	6	1
Other	5	1
	—	—
Total	458	99

a/ Of these, 102 were at the national level, 27 at the state or provincial level and 5 local.

Table 5. Length of time in current job

Length of time (in years)	Number of respondents	Percentage	Accumulated percentage
1 or less	48	10	
2	62	14	24
3	56	12	36
4	44	10	46
5	36	8	54
6	29	6	60
7	29	6	66
8	24	5	71
9	18	4	75
10	14	3	78
11-20	77	17	95
Over 20	14	3	98
No answer	7	2	
	<hr/> 458 <hr/>	<hr/> 100 <hr/>	

Table 6. Additional demographic activities, by type of employer

Employer	Number of Jobs	Percentage
University of college	98	41
Government departments	69	29
Research institutes	21	9
United Nations	12	5
Other international organizations	4	2
Foundations	8	3
Private companies	6	2
Other	23	10
	<hr/>	<hr/>
Total	241	100
	<hr/>	<hr/>

Table 7. Type of work undertaken in secondary demographic employment

Type of work	Number of jobs	Percentage
Teaching	68	28
Research	68	28
Teaching and research	16	7
Consultant or adviser	66	27
Editing or writing a demographic book or paper	12	5
Administration	11	5
	<hr/>	<hr/>
Total	| 241	100
	<hr/>	<hr/>

Table 8. Percentage of working time spent on secondary demographic activities

Percentage of time	Number	Percentage	Cumulative percentage
Over 50	2	1	
50	15	9	10
36-49	13	2	12
21-35	32	19	31
11-20	19	11	42
6-10	28	16	58
5 or less	35	20	
Short-term	5	3	
Occasional	5	3	
Varies	8	5	
Unclear	17	10	
No answer	3	2	
Total	<u>172</u>	<u>100</u>	

Table 9. Previous demographic employment, by employer

Employer	Number of jobs	Percentage
Universities or colleges	<u>238</u>	<u>44</u>
Government departments	<u>145</u>	<u>27</u>
National statistical or census bureaux	69	13
Other	76	14
Research institutes	<u>57</u>	<u>11</u>
Demographic	17	3
Other	40	7
United Nations	<u>43</u>	<u>8</u>
Secretariat	17	3
Demographic training centres	23	4
Specialized agencies	3	1
Other international organizations	<u>6</u>	<u>1</u>
Foundations	<u>22</u>	<u>4</u>
Private companies	<u>11</u>	<u>2</u>
Total	<u>535</u>	<u>100</u>

Table 10. Previous demographic employment, by type of work

Type of work	Number of jobs	Percentage
Teaching	63	12
Research	294	55
Teaching and research	94	18
Consultant or adviser	32	6
Editing or writing a demographic book or paper	8	1
Administration	40	7
Unclear	3	-
No answer	1	-

Table 11. Opinion of current employment opportunities for demographers

Opinion	In home country		In country of work	
	Number	Percentage	Number	Percentage
There is a shortage of demographers	215	39	231	42
Supply roughly equals demand	149	27	143	26
There are more demographers than there are jobs	60	11	53	10
The number of jobs is very small or none	34	6	32	6
There is a shortage of demographers and supply roughly equals demand	1	-	2	-
There is a shortage of demographers and the number of jobs is very small or none	11	2	11	
No opinion	68	12	60	11
Unclear	2	-	2	-
No answer	10	2	16	3
Total	<u>550</u>	<u>100</u>	<u>550</u>	<u>100</u>

Table 12. Opinion of future employment opportunities for demographers

Opinion	In home country		In country of work	
	Number	Percentage	Number	Percentage
Jobs will become more and more numerous	111	20	111	20
There will be a slight increase in the number of jobs	259	47	264	48
The number of jobs will remain fairly constant	78	14	86	16
The number of jobs will decrease slightly	15	3	17	3
There will be a considerable reduction in the number of jobs	11	2	8	1
No opinion	62	11	47	9
Unclear	5	1	5	1
No answer	9	2	12	2
Total	<u>550</u>	<u>100</u>	<u>550</u>	<u>100</u>

Table 13. Research activities: amount of time spent on various topics

Research topic	Amount of time spent							
	A large part		A small part		None		No answer	
	Number of respondents	Percentage	Number of respondents	Percentage	Number of respondents	Percentage	Number of respondents	
Methodology								
Methods and techniques of demographic data collection	153	34	146	32	77	18	75	17
Methods and techniques of demographic analysis	147	33	186	41	38	8	80	18
Projections and estimates	94	21	176	39	96	21	85	19
Population mathematics and models	43	10	116	26	188	42	104	23
Statistical analysis	128	28	171	38	60	13	92	20
Evaluation of family planning methods and programmes	53	12	59	13	145	32	194	43
Historical demography	12	3	68	15	165	37	206	46
Other	5	1	3	1	-	-	443	98
Population processes								
Nuptiality	43	10	124	27	154	34	130	29
Fertility	174	39	151	33	53	12	73	16
Mortality and morbidity	70	16	172	38	111	25	98	22
International migration	31	7	87	19	206	46	127	28
Internal migration	105	23	156	35	100	22	90	20
Other	5	1	4	1	2	-	440	98
Demography and related subjects								
Urbanization and regional planning	101	22	126	28	129	29	95	21
Public health	28	6	101	22	203	45	119	26
Food supply and demand	7	2	53	12	255	57	136	30
Manpower and employment	88	20	161	36	108	24	94	21
Demographic aspects of education	49	11	128	28	159	35	115	25
Population and economic growth	84	19	171	38	108	24	88	20
Population policies and programmes	63	14	151	33	130	29	107	24
Other	17	4	3	1	-	-	431	96

a/ Percentages are of the 451 respondents whose work included demographic research.

Table 14. Journals most frequently referred to in demographic research

Title	Respondents who refer	
	Number	Percentage of those engaged in demographic research
Demography	291	65
Population Studies	249	55
Population (French)	125	28
Population Index	110	24
American Sociological Review	108	24
Millbank Memorial Fund Quarterly	85	19
American Journal of Sociology	80	18
Journal of the American Statistical Association	67	15
Studies in Family Planning	42	9
Economic Development and Cultural Change	29	6
Eugenics Quarterly	23	5
American Economic Review	21	5

Table 15. Textbooks most frequently used by persons engaged in demographic research

Author and title	Respondents who refer	
	Number	Percentage of those engaged in demographic research
Barclay: Techniques of Population analysis	155	34
Hauser and Duncan: The Study of Population	79	18
Spiegelman: Introduction to Demography	72	16
Bogue: Principles of Demography	64	14
Pressat: Analyse demographique	53	12
United Nations: Determinants and Consequences of Population Trends	48	11
Petersen: Population	44	10
United Nations: Manuals and reports on methods of analysis (unspecified)	43	10
Thompson: Population Problems <u>a/</u>	43	10
Jaffe: Handbook of Statistical Methods for Demographers	41	9
Keyfitz: Introduction to the Mathematics of Population	29	6
United Nations: Manual IV: Methods of Estimating Basic Demographic Measures from Incomplete Data	28	6
Cox: Demography	23	5
Coale and Hoover: Population Growth and Economic Development in Low-income Countries	21	5
United Nations: Population Studies	21	5

a/ Later, Thompson and Lewis.

Table 16. Courses taught by persons engaged in demographic training

Type of course	Number of courses taught	Percentage of total
Introductory course in general demography	34	7
General course in demography	34	7
General course in population	121	26
Seminar in population or demography	14	3
General course in demographic analysis	66	14
Course in specific aspects of analysis	12	3
Course in the mathematics of population analysis	12	3
Course in aspects of demographic data collection	12	3
Course dealing with a specific region or country	22	5
Course in demographic theories	6	1
Course in: fertility	20	4
mortality	6	1
labour force	12	3
migration (general)	8	2
internal migration and urbanization	8	2
aspects of family planning	6	1
Demography taught as part of other courses:		
Economics	14	3
Ecology	11	2
Urban studies	10	2
Other	15	3
Other	15	3
Total	458	100

Table 17. Length of courses taught

Total number of hours	Number of courses	Percentage	Cumulative percentage
5 or fewer	13	3	3
6 - 10	37	8	11
11 - 20	62	14	25
20 - 30	124	27	52
31 - 40	64	14	66
41 - 50	76	17	83
Over 50	66	14	97
Unclear	8	2	
No answer	8	2	
Total	458	100	

Table 18. Level of courses taught

Level	Number of courses	Percentage
Bachelors	189	41
Masters	82	18
Bachelors and masters	33	7
Doctors	42	9
Doctors and masters	41	9
United Nations demographic training centres	37	8
Other graduates	20	4
No answer	14	3
Total	458	100

Table 19. Main discipline of student to whom demographic courses were taught

Main discipline of students	Number of courses	Percentage <u>a/</u>
Demography	70	25
Sociology	104	38
Public health or medicine	19	7
Economics	28	10
Mathematics or statistics	14	5
Various	36	13
Other	5	1
Total disciplines specified	276	100
No answer	182	
Total	458	

a/ Percentage is of the 276 specified answers.

Table 20. Number of students attending courses in demographic training

Number of students	Number	Percentage	Cumulative percentage
5 or fewer	43	9	9
6 - 10	84	18	27
11 - 20	98	21	48
21 - 30	84	18	66
31 - 50	82	18	84
51 - 100	35	8	92
101 - 200	18	4	96
Over 200	10	2	98
No answer	4	1	
Total	458	100	100

Table 21. Textbooks used by persons teaching demography

Author and title	Number of times
Barclay: Techniques of Population Analysis	77
Petersen: Population	42
Pressat: Analyse demographique	38
Bogue: Principles of Demography	32
Spiegelman: Introduction to Demography	27
Thompson: <u>a/</u> Population Problems	27
United Nations: Determinants and Consequences of Population Trends	26
Hauser and Duncan: The Study of Population	23
Thomlinson: Population Dynamics	22

a/ Later editions are written by Thompson and Lewis.

Table 22. Subjects taught in addition to demography

Subject	Number of respondents teaching it	Percentage of total respondents in teaching <u>a/</u>
Sociology	105	43
Statistics or mathematics	66	27
Methods of social research	52	21
Ecology	30	12
Economics	24	10
Other	29	12
None	78	32
No answer.	61	25

a/ I.e. percentage of the 247 respondents who teach demography.

Table 23. Textbooks used by respondents during their own demographic training

Author and title	Number of times used	Percentage of respondents
Barclay: Techniques of Population Training	188	34
Hauser and Duncan: The Study of Population	82	15
Spiegelman: Introduction to demography	74	13
United Nations: Determinants and Consequences of Population Trends	73	13
Thompson: <u>a/</u> Population Problems	71	13
Jaffe: Handbook of Statistical Methods for Demographers	55	10
Pressat: Analyse demographique	46	8
Petersen: Population	41	7
Spengler and Duncan: Demographic Analysis: Selected Reading	30	5
Dublin, Lotkay Spiegelman: Length of Life: A Study of the Life Table	23	4
Cox: Demography	23	4
Wolfenden: Population Statistics and their Compilation	21	4
Coale and Hoover: Population Growth and Economic Development in Low-income Countries	20	4
Henry: Prospectives demographiques	20	4
No answer	112	20
Can not remember	51	9
Did not use textbooks	6	1

a/ Later Thompson and Lewis.

Table 24. Adequacy of demographic training by topic

Topic	Adequacy of training						No training received	
	Very good		Adequate		Insufficient			
	Number of respondents	Percentage	Number of respondents	Percentage	Number of respondents	Percentage	Number of respondents	Percentage
Methods of demographic data collection	175	34	226	44	100	19	13	3
Methods of demographic analysis	263	50	199	38	64	12	2	-
Substantive demography	267	51	206	39	46	9	3	1
History of population	69	14	237	48	148	30	41	8
Population projections and estimates	150	29	235	46	109	21	21	4
Population theories and doctrines	81	16	280	56	121	24	21	4
Population policies and programmes	60	12	208	42	170	34	60	12
Historical demography	28	6	177	35	155	31	139	28
Mathematics and statistics	121	23	240	46	152	29	8	2
Sociology	175	35	163	33	112	22	49	10
Economics	73	14	150	30	188	37	94	19
Genetics	5	1	73	15	127	26	275	57
Public health	16	3	69	14	123	25	381	57
Population geography	26	5	119	24	137	28	211	43
Urbanization and town-planning	37	7	134	27	161	32	167	33

Table 25. Topics to be emphasized in demographic training

Topic	Number of respondents who asked for more emphasis
Demographic analysis in general	120
Mathematical demography	44
Population projections	58
Demographic surveys	31
Substantive demography in general	46
Urbanization	33
Population theories	47
Population policies and programmes	81
Interdisciplinary aspects in general	25
Sociological aspects	63
Economic aspects	64
Public health	31
Mathematics and statistics	72
Town or regional planning	21

Table 26. Topics to be added to demographic training courses

Topic	Number of respondents who thought it should be added
Evaluation of family planning programmes	25
Mathematical demography	21
Historical demography	30
Population policies and programmes	36
Economic demography	21
Public health	50
Town or regional planning	25

PERIODICALS IN THE ECAFE REGION WITH SPECIAL INTEREST IN POPULATION INFORMATION

by

the ECAFE secretariat

The First Asian Population Conference urged the secretariat to undertake, among other things, the function of "maintaining a list of demographic research and training institutions in countries within the region and their activities, and promoting co-operation and division of labour among them..."^{1/} In 1966, the Expert working group on the feasibility of establishing a regional population centre again stressed that "the population staff of ECAFE should maintain continuing assessment of the needs for training in population fields within the region, the adequacy of the existing and planned facilities to meet those needs, and the most effective means to expand or supplement facilities."^{2/} The secretariat in 1968 initiated its first regional inventory of personnel engaged in and the periodicals used in the field of population. The information was published in 1970 in the *Directory of Key Personnel and Periodicals in the Field of Population in the ECAFE Region*. The Directory has become a basic reference for the ECAFE secretariat which is conducting a series of action-oriented follow-up surveys to collect further information.

In 1970, the secretariat undertook the first in-depth regional mail survey of demographic teaching and research institutions. Apart from enabling the secretariat to compile a list of these institutions, the survey made it possible for the secretariat to bring up to date the roster of personnel working in population and related fields, and to expand its regional list of periodicals. This year the secretariat conducted a regional survey of those periodicals recommended by demographers in the region which carry relevant information on population subjects and which can serve as useful tools to researchers, teachers, trainers and government officials. The assessment of the periodicals is presented in this report.

Methods used in the study

The questionnaire was sent to the editors of every periodical in the region known to publish population information. The mailing addresses were based on information in the *Directory* and on information available in the secretariat. Follow-up surveys are planned to bring the information on addresses up to date.

In order to obtain an over-all view, the questionnaires were directed to the editors of each periodical, the individuals thought to be most knowledgeable as to the publication's role. The editors could also confirm whether the periodicals recommended by demographers in the 1968 ECAFE survey continued to publish population information or had ceased publication. The survey also sought to iden-

^{1/} *The Asian Population Conference* (United Nations publication, Sales No. 65.11.F.11), p. 51.

^{2/} "Report of the expert working group on the feasibility of establishing a regional population centre", (E/CN. 11/L. 173) p. 22.

tify the sub-areas in population studies covered by each periodical, including the portion of the total contents of the publications related to population. Questions were asked about circulation, content priority in population, price, language, type of periodical, frequency of publications, and so on.

A total of 391 questionnaires were mailed on 3 April 1972 and reminders were sent later. Whenever possible, individual contact was made. More than one half, 234, responded. The percentage of returns was 59.6 per cent. For the 40.4 per cent not responding, the secretariat will undertake further studies, to learn what are the communication barriers they encounter. Twenty-two respondents said they no longer published articles on population; 15 periodicals had ceased publication; and seven editors told ECAFE about newly established periodicals in the field. The following analysis is based on information provided by the 204 regional periodicals.

The survey lists monographs and study series, but does not include them in its analysis, since data are incomplete. Some information on study series and monographs may be found in the secretariat's 1972 **Directory of Research Teaching and Training in Demography**. The secretariat plans to present detailed information on monographs in a later study. The exercise should be considered as a preliminary inventory and study of one of the sources of population information within the region. The findings reported in this document should be viewed as indicators for possible future studies and actions.

Findings and remarks

The findings are presented under five general headings: classification of the periodicals; composition of the audience; subject matter; distribution; and language.

Classification of the periodicals

The 204 periodicals from 24 ECAFE countries may be classified in three categories: (i) professional journals; (ii) the regular compilation of statistical data, statistical yearbooks, and so on, henceforth referred to as a statistical publications; and (iii) newsletters. The survey identified 91 professional journals, 81 statistical publications and 32 newsletters. Their distribution is shown in table 1.3/

In each category, the proportion of reported population information in the total content in 1971 varied from less than 20 per cent to more than 80 per cent. Ninety-five periodicals indicated that population subjects occupied 20 per cent or less of their total content; 68, 80 per cent or more; and 33, between 20 per cent, and 80 per cent (table 2). If it is assumed that a periodical with 40 per cent or higher of its total content in the population field is a "population periodical", 78 population periodicals are so identified in this study. However, it is useful also to learn more about the subject in periodicals reporting a share of 20 per cent or less.

3/ All data presented in tables 1-6 are from a *survey of periodicals in the population field in the ECAFE region* conducted by the ECAFE Secretariat 1972.

Table 1. Distribution in ECAFE countries* of population-related periodicals, by category.

Country	Newsletter	Statistical publications	Professional journals	Total
Regional	4	1	-	5
Afghanistan	1	-	1	2
Australia	-	13	5	18
Brunei	-	-	-	-
Burma	-	-	1	1
Fiji	1	-	-	1
Hong Kong	-	4	2	6
India	7	4	27	38
Indonesia	-	1	3	4
Iran	1	-	2	3
Japan	2	12	17	31
Khmer Republic	-	1	1	2
Laos	-	1	-	1
Malaysia	1	3	6	10
Nepal	-	2	-	2
New Zealand	-	10	3	13
Pakistan	-	3	6	9
Papua and New Guinea	-	2	1	3
Philippines	8	2	9	19
Republic of Korea	3	5	1	9
Republic of Viet-Nam	-	4	-	4
Singapore	-	3	3	6
Sri Lanka	1	3	-	4
Thailand	3	6	3	12
Western Samoa	-	1	-	1
	32	81	91	204

Table 2. Periodicals in the ECAFE region and their share of population content, 1971.

Category of periodical	Percentage of total content in the population field					Less than No answer
	20%	20-40%	40-60%	60-80%	over 80%	
Professional journal	51	15	4	2	15	4
Statistical publication	37	4	-	-	37	3
Newsletter	7	4	3	1	16	1
Total	95	23	7	3	68	8

The total number of pages devoted to population information in 1971 was estimated for each periodical according to: (i) annual periodiaty of issue; (ii) average number of pages per issue; and (iii) proportion of total content regarded as population information. Of a total of some 19,000 pages on population, it is in the statistical publications, and 1,650 in the newsletters. It is clear that professional workers would find it difficult to read all the periodicals in their field, and there is a need to help them select and obtain material of interest to them. Establishing and strengthening clearing-house functions in the population field at the national level may offer one solution, and the regional secretariat's clearing-house is providing this service on request.

Composition of the audience

The audience of the periodicals categorized has been determined by examining the patterns of readership distribution. The professional journals in general reached academic staff more than other audiences such as business and industrial groups or the general public. The statistical publications reached different government offices and business groups but fewer academics and members of the general public. Since newsletters aimed at a broader range of audience, the general public occupies an important audience position. Some newsletters are prepared solely for them.

Two findings emerge: (i) periodicals in the ECAFE region reach diversified audiences, possibly because they generally cover many fields of knowledge; (ii) governmental departments usually receive a greater variety of population publications than do academic institutions, although it is not known what use is made of this information. Do the periodicals reach all the ministries concerned and the staff working on population-related projects in labour departments, ministries of education, and so on? Further information is necessary to distinguish between target audience and actual readers.

Information flows from the government to the university or to other academic institutions were not consistent. Although many periodicals were sent to university libraries, many were not. In improving the interrelationship between academic organizations and government institutions, emphasis should be placed on "two-way flows" and "exchanges" of information. Governments can provide one of the approaches in referring back to the academic institutions together

with requests for further study, the problems encountered in their action programmes. How to ensure that teaching and research institutes receive such information from the administrative agencies remains an unsolved problem.

The subject matter

Periodicals was asked to rank in order of priority the population-related subjects covered in 1971. Some had no difficulty in answering this question, while those which had no particular policy on publishing such information or were dependent on the contribution of authors sometimes failed to reply. The survey data received have been ranked in the order of importance stated. Since the most important subject for one periodical could be ranked less high by another, for the purpose of comparison a weight has been given to each order (e.g., a subject occupying first order was assigned a weight of four and one occupying fourth place was assigned a weight of one). In this way, a weighted frequency table according to subject has been prepared. The results appear in table 3.

In the category of professional journals, the weighted and the unweighted ranks are the same. The five subjects most frequently covered were: (i) labour force and employment, (ii) family planning; (iii) fertility, (iv) urbanization and (v) mortality and morbidity. The statistical publications show that vital statistics was the most popular subject according to both ranks, the weighted rank showing certain differences from the unweighted. For example, "census" information appeared in a few periodicals, but those periodicals which reported on the subject of the census tended to treat it as the main theme. On the contrary, mortality and morbidity was covered by a larger number but treated in a secondary manner, so that after being assigned a weight it dropped in from second to fourth rank. In the newsletter category both weighted and unweighted orders showed family planning as the most popular subject; the weighted rank shows policy and legislation as second, fertility as third, and vital statistics as fourth.

Distribution

The number of copies of each professional journal distributed varied from 100 to 5,000. The other two categories showed an even wider range — from less than 100 copies to more than 10,000 copies. The number of periodicals in terms of copies distributed are grouped in table 4. The three categories of periodicals have a similar pattern in distribution, i.e. mainly institutions and people in the country of publication: 75 per cent of professional journals, 84 per cent of statistical publications, and 94 per cent of newsletters. (See table 5.)

For distribution outside the country, but still within the ECAFE region, neighbouring countries seem to have closer relations in the exchange of their periodicals. Three main groupings emerged from the replies received: (i) Australia, New Zealand and Papua New Guinea; (ii) Japan and the Republic of Korea; and (iii) Malaysia and Singapore. Compared with the other countries in the region, Japan, receives more copies of more publications from more countries in the region.

The questionnaire did not ask for the number of copies distributed to each

Table 3. Priority areas of three types of periodicals in the region.

Periodicals \ Subject												
	Policy and legislation	Mortality and morbidity	Fertility	Family planning	Labour force and employment	Urbanization	Census	Vital Statistics	Migration	Ecology	Rural population	Others, including no answer <u>a/</u>
Professional journals:												
Frequency	10	18	20	25	32	18	9	13	13	9	9	26
Rank	6	4	3	2	1	4	8	5	5	7	7	-
Weighted frequency	26	47	58	77	105	48	29	37	22	24	23	96
Weighted rank	8	5	3	2	1	4	7	6	11	9	10	-
Statistical publication:												
Frequency	1	19	8	5	4	-	18	29	18	-	2	15
Rank	7	2	4	5	6	-	3	1	3	-	6	-
Weighted frequency	4	59	25	16	12	-	71	95	49	-	6	50
Weighted rank	9	4	6	7	6	-	2	1	5	-	8	-
Newsletter:												
Frequency	11	1	12	22	19	4	3	8	-	1	7	8
Rank	3	8	2	1	2	6	7	4	-	8	5	-
Weighted frequency	33	3	28	78	63	6	8	17	-	3	13	13
Weighted rank	2	9	3	1	3	8	7	4	-	9	5	-

a/ Figures include those periodicals which provided answers not directly relate to population studies, as well as those which listed areas but without giving a priority order.

Table 4. Classifications of periodicals, by number of copies distributed.

Number of periodicals Category	Less than 100 copies																More than 10,000 copies
	Total	100	200	300	400	500	600	700	800	900	1,000	1,500	2,000	2,000	2,999	4,999	
Professional journals Statistical publications	90	1	4	3	5	6	9	3	5	2	3	19	10	6	4	13	-
	30	1	3	-	2	1	-	-	1	2	1	2	1	5	3	3	5
Newsletters	53	3	3	5	5	4	2	3	3	3	2	5	4	4	3	2	2

Table 5. Number of copies of population periodicals distributed.

Places Category	Number of copies distributed		Number of copies distributed inside the country of origin		Number of copies distributed outside the country of origin	
	percentage		percentage		Percentage	
Professional journals Statistical publications	129,573	100.0	96,674	74.6	32,863	25.4
	112,605	100.0	94,933	84.3	17,672	15.7
Newsletters	247,045	100.0	232,570	94.2	14,475	5.8

country, and there is no way to tell the exact number distributed inside or outside the region. Answers have been grouped into three subcategories for the information provided on "copies of each issue distributed outside the country and, if possible, where main distribution occurs outside your country." The first group included those responding that a particular publication was distributed to some countries inside the ECAFE region and some outside the region; the second those responding that a publication was distributed only to countries outside the region. The third group reported that a publication was sent only to one particular country outside the region. From the latter two groups it is possible to calculate the minimum number of periodicals and copies sent outside the ECAFE region.

It is noted that, of every 100 copies of professional journals sent outside the country of origin, 65 were sent to Europe, the United States and/or Latin America. Again, 44 had a limited chance of being seen by other countries inside the ECAFE region, because they were distributed outside the region only. Similar situations exist for statistical publications and newsletters. All available facts point to one conclusion: in order to increase regional co-operation in sharing population research findings and in exchanging views, knowledge and experience, it is necessary to intensify the exchange of periodicals among countries inside the region.

Increased distribution of copies inside the ECAFE region ought not to be accomplished at the cost of reduced distribution outside of the region, although this may be necessary if funds are limited. Many periodicals reported distribution to certain foreign countries, sometimes only to the United States, but the number of copies sent out is limited. (See table 6.) Of the various kinds of professional journals, 62 per cent reported fewer than 300 copies distributed outside their country. About 74 per cent of the statistical publications and 50 per cent of newsletters reported fewer than 300 copies for foreign readers. In view of the apparently vast readership outside the ECAFE region and while it may be impossible to determine the optimum number of copies needed), it is doubtful that the current limited circulation is sufficient. It is suggested that the limitation on number of copies printed may create a delay or loss in disseminating important population data within the region. Systematic procedures are necessary to solve this delay.

Language

Table 7 shows the estimated number of published pages on population and an indication of the language used in each type of periodical. Of the "population pages", 69 per cent of the professional journals are printed in English; 5 per cent in two languages or more (local language and foreign language); and 26 per cent were published in one language (mostly the local language, sometimes a foreign language other than English). For statistical publications, 31 per cent were published in English; 55 per cent in two languages, with table headings in a foreign language (mostly English); and 14 per cent in national languages other than English. In the newsletter category, English was also the dominant language (about 69 per cent).

Table 6. Classification of periodicals according to number of copies distributed outside the country of origin

Number of periodicals Category	Under 100 copies																Total	More than 10,000 copies
	79	29	12	8	5	6	3	4	3	2	4	2	1	1,500	2,000	3,000	4,000	
Professional journals	100%	36.7	15.2	10.1	6.3	7.6	3.8	5.1	3.8	2.5	5.1	2.5	1.3	-	-	-	-	-
Statistical publications	53	11	14	14	2	2	3	-	2	3	-	2	-	-	-	-	-	-
Newsletter journals	100%	20.8	26.4	26.4	3.8	3.8	5.7	-	3.8	5.7	-	3.8	-	-	-	-	-	-
	18	4	3	2	2	1	1	-	-	-	2	1	1	-	-	-	1	-
	100%	22.0	16.7	11.1	11.1	5.5	5.5	-	-	-	11.1	5.5	5.5	-	-	-	5.5	-

Note: It was found during the first regional survey of research and teaching institutions in demography in the ECAFE region, conducted by the secretariat in 1970/71, that there were 235 such bodies in the region. If it is agreed that each institution is entitled to one copy of the publication, sufficient copies should be reserved for such distribution outside the country of origin but inside the region. The editor of a publication might also make certain that a minimum of five distribution copies went to each ECAFE member Government. The minimum number of copies required would thus be increased by 175. Clearly, 300 - the number more than half of the periodicals reported for such distribution — is insufficient to meet this need.

Table 7. Estimated number of pages of population information printed in various languages (in pages)

Language	Professional journals	Statistical publications	Newsletters
English	5,222 (69%)	2,297 (31%)	1,192 (68.8%)
Two languages	354 (5%)	4,094 (55%)	84 (4.8%)
Other language only	1,984 (26%)	1,050 (14%)	456 (26.3%)
Total	7,565 (100%)	7,441 (100%)	1,732 (100%)

These findings should not be interpreted to mean that there are no language problems affecting the exchange of population information in the region. Several factors have to be considered. English-language periodicals are easily accessible. Periodicals published in Australia and New Zealand, where English is the mother tongue, were greater in volume and more in kind. Many periodicals published in Hong Kong, India, Malaysia, Pakistan, Singapore and other places having historical relations with Great Britain were also in English. Many others were printed in English in the Philippines, which had historical relations with the United States. Countries with a French influence tended to print in their national language or in French. Some periodicals in Japan, the Republic of Korea and other places were published in the national languages only. Language can be a barrier for readers outside the country. On the other hand, a national periodical published in foreign languages may not be comprehended by local readers and people without higher education. This factor reduces the value, particularly of newsletters which are for the general public readership.

One way of overcoming language barriers is to prepare a summary of journal articles are statistical table headings in another widely spoken language. Taking professional journals as an illustration, it was seen that, among 84 journals', only 24 provided summaries either in the national language or in a foreign language (mostly in English). However, the incentive for providing a summary to the articles was not identified. Two indicators have been found: (a) the number of copies distributed had no correlation with the fact that the summary was or was not available; (6) in reply to the question whether summaries would be prepared if financial aid from outside were provided, 24 out of 60 replied in the affirmative. Of the 24, 11 already had summaries but were interested in improving their quality. It should be remembered that while summaries in other languages may assist the reader in understanding the topic covered, they are not enough to replace the original or to be utilized for working purposes. The reasons why articles in journals appear without summary are not confined to lack of financial support and it is essential to the matter further.

TOPIC 8: INTERNATIONAL COOPERATION IN POPULATION POLICIES AND PRO- GRAMMES

POPULATION ASSISTANCE TO ASIA, 1960-1970*

by

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For reasons of space, this paper which is one of a series prepared as part of the Population Programme of the Development Centre on the flow of aid for population activities to the developing world,^{1/} is here presented in condensed form; the complete version is available upon request at the Development Centre.^{2/}

Population activities are defined here as comprising demography, family planning and biomedical research. ^{3/} Because of the relatively early recognition by several Asian countries of the importance of the population factor in the development process, programmes of population control have a longer history in Asia than elsewhere in the world. Consequently, foreign assistance for those programmes also covers a longer period of time. This paper attempts to give a picture of the flow of aid from 1960 to 1970, the First United Nations Development Decade. Sufficient data exist to show from whom and to where the aid has gone, and for what major purpose.

Several attempts have been made to make a more detailed analysis of population aid, by purpose, including the work undertaken as part of the OECD Population Programme. A country-by-country survey is included in the fuller version of this paper.

One of the initial problems in preparing this paper has been to decide on a universally acceptable list of countries to be included under the term "Asia". Many organizations have their own particular administrative breakdown into regions and these often differ widely. To try and achieve the maximum applicability for the figures and comments given here, it has been decided to follow the regional divisions used by the United Nations Population Division. There-

* The opinions expressed in this paper are the author's own and do not necessarily reflect the views of the ECAFE secretariat or of the United Nations.

^{1/} Papers already completed are (a) "Aid policies: the flow of aid," in *Summary Proceedings of the Third Annual Population Conference, December 1971* (CD/P/277); (b) "Population assistance to Africa, 1969-1970," prepared for the United Nations/IUSSP African Population Conference, Accra, December 1971 (CD/P/236); and (c) "Development assistance for population activities — an analytical survey," prepared for the OECD DAC Meeting on Population, September 1971 (CD/P/244).

^{2/} Document CD/P/249.

^{3/} See Annex 1 of this paper

fore this paper is not concerned solely with the countries that make up the member countries of the Economic Commission for Asia and the Far East. Included are the countries of the Middle East (excluding Egypt and North Africa), and excluded are the countries and territories making up Oceania. Neither the inclusion of the one (with a population of 77 million out of Asia's 2,056 million in 1970) or the exclusion of the other (Oceania received \$US252,000 in population aid in 1969, \$US91,000 in 1970) should seriously affect the conclusions drawn concerning population assistance to Asia as a whole.

The flow of aid

(a) The donors

During the first Development Decade, the total flow of population assistance to Asia totalled approximately \$US135 million. (see table 1.) Of this sum, \$US102 million was committed during the last three years, that is to say 1968-1970. ^{4/} Just over half of the population assistance granted was bilateral (\$US 73 million). All but about 2 per cent of this total came from two Governments; that of Sweden, which granted some \$US13 million over the decade, and that of the United States, which granted \$US59 million, mainly over the period 1968-1970. ^{5/} Multilateral aid through the United Nations system was also confined mainly to the period after 1968. Significant increases in population aid to Asia through the United Nations system is certain during 1971, owing largely to the expansion of UNFPA, and the entry of the World Bank as a major source of funding in the population field, and this trend will increase during the 1970s. Aid from the private sector was more evenly spread out over the decade as a whole, and is significant for its volume (more than \$US42 million) as well as its consistency. In fact, over the decade, the second and third donors after USAID, in total aid granted, are both private organizations; the Ford Foundation (\$US17 million) and the Population Council (\$US15 million).

(b) The recipients

Population assistance to Asian countries has been much more widely and equatly distributed than has been the case for Africa, where, for example, in 1970, of the \$US6.5 million in aid received, over \$US6 million went to 11 out of the 42 independent developing countries. India received the largest amount of aid over the decade (\$US45 million), but because of the size of its population, less per head (8 cents) than any other Asian country with a population policy (excluding Indonesia but including countries such as Thailand and the Philippines which did not declare official population policies until 1970). (see table 2.)

Among the major recipients of population assistance over the decade are the Republic of Korea (29 cents per head) and, somewhat surprisingly, the Philippines (27 cents). In the second category come Sri Lanka and Malaysia (17 cents), Thailand (15 cents) and Pakistan (14 cents). The largest of the remaining

^{4/} See Annex 2 of this paper.

^{5/} Excluding aid in local currency

countries, Indonesia, only received some 4 cents per head, but the recent World Bank/UNFPA grant of some \$US30 million will have placed Indonesia among the major recipients of population aid. A survey of the aid received by Asian countries suggests that, contrary to the experience of African countries, there is no direct link between the adoption of a government policy on population and the flow of aid. As far as the world picture of population aid flows as a whole is concerned, Asia, with 4.5 cents per head, received in 1970 more than Africa (3 cents) and less than Latin America (6 cents). ^{6/} Over the decade, however, Asia received more aid per head than elsewhere, owing to its longer experience of population policies and their consequent support by foreign assistance.

Analysis of population assistance, by purpose

As table 3 shows, almost all population assistance to Asia is for the purpose of promoting family planning programmes.

The countries selected for inclusion in table 3 are the major recipients of population assistance. As they received some 96 per cent of the population aid to Asia for the period 1968-1970 (excluding grants made on a regional basis), the conclusions drawn from a study of the countries are valid for the region as a whole. While the methods of data collection employed by the Centre may underestimate aid flows for demography and biomedical research, this is unlikely to have been of any significance. The percentage of aid going to non-family planning activities is considerably less than that for Africa, for which in 1969, 28 per cent and in 1970, 21 per cent of population assistance was directed to demography or biomedical research.

The data from which table 4 is compiled enable a more detailed breakdown of "demography" to be made, ^{7/} but nearly all the support for "family planning" comes under the general category. If a further analysis of "family planning" aid is required, this should be done from data provided by the recipient, where such information is necessary for the efficient running of the programme, rather than from data provided by the donors of aid, to whom a breakdown of the purpose for which a commitment has been made may not be available, or yet decided on. This is particularly likely to be true for an aid programme undergoing rapid expansion, such as population assistance.

Most of the attempts to assess the purpose for which population aid is directed have in fact been based on data available at the recipient level, as the following summary shows.

One such study has been undertaken at the Development Centre as part of the Population Programme. ^{8/} Table 5 has been abstracted from a table, included in that study, which shows a considerable degree of dissimilarity concerning the purposes for which aid to family planning programmes is put.

^{6/} "Population assistance to Africa, 1969-1970", *op. cit.*

^{7/} See "Development assistance for population activities - An analytical survey", *op. cit.*

^{8/} T.K. Ruprecht and C. Wahren, "Population Programmes and Economic and Social Development", (Paris, OECD 1970).

Seen from the donor angle, there are real differences in purpose. As table 4 shows, some agencies, such as USAID, SIDA and IPPF, have given support almost exclusively for family planning; others, such as UNFPA, the Ford Foundation and the Population Council are able to provide assistance under the other categories of demography and biomedical research.

A study of these data reveals a fair degree of dissimilarity, caused only partly by the different criteria used by reporting officials to allocate aid by function and currency sources. However, a study of the upper triangles shows that operational activities and contraceptive supplies absorb the most aid in all cases except for India. The lower triangles show that foreign aid for research and training makes up a large percentage of the relatively modest over-all expenditure for those two categories of activity. Possibly of greater significance is the relatively high proportion of operational activities for such well-established programmes that are borne by foreign aid, ranging up to 62 per cent for Pakistan.

A further study covering this subject is that by Warren Robinson. ^{9/} Using a completely different set of categories to define the purpose for which aid is used, he comes to the conclusion that the aid component seems to show a trend towards convergence at around 20-30 per cent of the total budget. This study also shows wide differences in the categories of activities receiving support in different countries, as table 6 indicates.

However, Robinson suggests that particularly from the data for the most recent years, a tentative pattern does emerge which indicates a trend away from general items (salaries and allowances, administration) and a concentration on more specific items (contraceptive supplies, vehicles and equipment, analysis and evaluation, research and foreign training). This pattern emerges from a study of the more mature programmes, and is probably due to the fact that the favoured categories of functions play a certain, rather predictable role in total programme activities. Robinson goes on to point out that, to the extent that foreign aid mainly supports these functions, the role of foreign aid is also pretty well determined.

Another trend noted by Robinson is the sharp increase in foreign aid's relative importance in recent years, reflecting the rapidly increasing availability of funds, due primarily to the changed guidelines governing the activities of USAID in this field.

To obtain a clearer picture of the role that foreign assistance plays in supporting various aspects of family planning programmes, the situation has been examined country by country in the full version of this paper.

Conclusion

The main conclusion to be drawn from this brief survey is that the rapid

^{9/} W. Robinson, A Cost Effectiveness Analysis of Selected National Family Planning Programmes, 1969 (a report on phase II of the Pennsylvania State - USAID project).

increase in population aid flowing to Asia largely precludes any analysis of the role of such aid in supporting population programmes. Aid to Asia has risen from less than \$US8 million in 1967 to \$US24 million in 1968, \$US27 million in 1969 and \$US52 million in 1970, and provisional figures for 1971 indicate a further substantial increase. ^{10/} There seems to be no clear link between the flow of aid and the adoption of a national population policy, including a family planning programme: India, with 15 per cent of its over-all budget (including aid in local currency) borne by foreign aid during the 1960s, and Pakistan, with 74 per cent (1968/69) borne by foreign aid, are at the two extremes, and are both programmes of long standing, whereas, for countries which did not declare policies until the 1970s, Indonesia, with very little population aid (4 cents per head over the 1960s), contrasts with the Philippines (27 cents) and Thailand (15 cents). The trend suggested by Robinson, that foreign aid tends to converge to between 20 and 30 per cent of the total budget for the family planning programme, cannot be confirmed or rejected, owing primarily to the budgetary and financing distortions caused by the spectacular increase in population assistance to Asia.

In the present circumstances it is extremely difficult to distinguish any specific aspects of population programmes on which aid is concentrated. The country-by-country survey undertaken at the Centre shows the obvious importance of aid in providing supplies, including contraceptives and equipment and especially vehicles, and also the interest of aid donors in research, evaluation and training. Nevertheless, most aid, particularly if aid in local currencies is considered, goes to support the ordinary routine operational costs of family planning programmes.

The brief survey of population assistance to Asia undertaken here also suggests that, if the analysis of the role of aid and the particular activities it supports are to be developed, this can most effectively be done from the recipient point of view. The OECD Population Programme's experience is that, whereas donors can report satisfactorily on where their aid is going, for several reasons they are unable to report in detail on the purpose for which that aid will be used, but only in broad classifications, such as demography, biomedical and family planning. A more detailed breakdown by the donor would probably be counter-productive and could even slow down aid flows. Particularly for major grants of several million dollars, to request a breakdown by purpose before the grant can be made might cause delays: probably it is of greater importance to make the commitment of a specific sum for a broad purpose, and then to assist the authorities of the recipient country, if requested, to plan the more detailed allocation by category in the firm knowledge that a certain sum is available to them.

^{10/} It should be noted that, despite this increase, population assistance is still only about one per cent of the total official development assistance to Asia (4,394 million in 1974).

Table 1. Aid flows: total population assistance to Asia,
(1960-1970, by donor
(in thousand US dollars)

Donor	1961	1966	1970	1960-1970
Governments				
Sweden	91	920	2,711	12,879
United States	0	2,177	32,061	58,836
Others	0	39	790	1,293
United Nations system				
United Nations	..	..	233	686
WHO	..	..	686	1,294
UNICEF	..	..	6,003	14,510
UNFPA	0	0	2,676	2,900
Private organizations				
Ford Foundation	1,152	2,529	1,062	17,233
IPPF	69	211	3,075	7,258
Population Council	548	1,307	1,597	15,069
Others	9	112	657	2,593
Total	1,869	7,295	51,550	134,552

Source: Annex III of the unabridged version, table I. Please insert p. 602.....

Table 2. Population assistance to Asia, 1960-1970 by recipient:
selected countries, selected year's and
population assistance per head

Country	Total population on ^{a/} (in millions)			Total population assistance (in thousands US dollars)			Population assistance per head (in US cents)			
	1961	1966	1970	1961	1966	1970	1961	1966	1970	1960- 1970
India	442	499	555	683	2,466	22,276	0	1/2	4	8
Nepal	9	10	11	-	2	471	0	0	4	9 2/3
Pakistan	103	120	137	966	771	4,179	1	2/3	3	14
Sri Lanka	10	11	13	46	321	253	0	3	2	17
Total middle south Asia	602	683	762	1,694	3,599	27,747	0	1/2	3 1/2	
Indonesia	95	108	121	-	31	1,896	-	0	1	12 4
Malaysia, West	7	8	9	3	214	642	0	2 2/3	7	17 1/2
Philippines	28	33	38	-	78	5,851	0	0	15 1/2	27 1/4
Thailand	27	32	36	1	201	1,851	0	2/3	5	15
Total Southeast Asia ^{c/}	208	237	266	8	540	10,416	0	0	4	
Turkey	28	32	36	-	2,377	320	0	7 1/2	1	12
Total Southeast Asia	60	69	77	36	2,394	795	0	3 1/2	1 1/2	
Korea, Republic of	25	29	32	5	492	2,043	0	1 2/3	6 1/2	29 1/4
East Asia ^{d/}	41	47	52	63	637	2,646	0	1 1/3	5 1/2	
Asia ^{d/}	910	1,035	1,156	1,840	7,247	51,484	0	3/4	4 1/2	
ASIA	1,680	1,875	2,056	1,868	7,295	51,550	0	1/3	2 1/2	

Sources: Population assistance figures abstracted from annex III of the un a bud
ged version of this paper, compiled from returns submitted by donors
to the Development Centre.

- ^{a/} All population figures taken from: "Total population estimates for world,
regions and countries each year 1950-1985"
^{b/} Based on 1970 population figures.
^{c/} Excluding the Democratic Republic of Viet-Nam.
^{d/} Excluding China, the Democratic People's Republic of Korea, Japan and
Mongolia.

Table 3. Analysis of population assistance, by purpose,
1968-1970: selected countries only
(in US dollars)

Country	Demography	Family planning	Biomedical	Percentage of aid going to purposes other than family planning
India	421,733	34,029,915	350,313	
Pakistan	238,846	11,801,739	3,500	
Nepal	-	1,058,145	-	
Sri Lanka	36,000	679,254	-	
Total: Selected countries Middle south Asia				
	696,579	47,569,053	353,813	2
Indonesia	165,350	4,217,070	78,206	
Malaysia	-	999,401	-	
Philippines	250,143	8,840,411	145,159	
Thailand	752,978	3,972,436	25,110	
Total: Selected countries, Southeast Asia				
	1,168,471	18,029,318	248,475	8
Turkey	321,350	515,084	-	62
Korea, Republic of	274,198	6,947,242	95,203	5
Total: selected countries Asia,				
	2,460,593	73,060,697	697,491	4

Source: Annex III of the unabridged version of this paper, table 3; data compiled from returns submitted by donors to the Development Centre.

Table 4. Assistance by some main donor agencies for demographic, biomedical and family planning work during the decade 1960-1970
(in US dollars)

Purpose \ Donor	United States (USAID)	Sweden (SIDA)	UNFPA	Ford Foundation	Population Council	IPPF
Demographic	393,000	-	1,128,440	3,348,000	2,346,644	-
Biomedical	-	-	147,095	3,559,700	2,462,060	-
Family planning	58,443,000	12,879,105	1,593,400	10,325,250	10,113,046	7,778,280
Other	-	-	31,500	-	147,724	-
Total	58,836,000	12,879,105	2,900,435	17,232,950	15,069,474	7,778,280
					Total	114,696,244

Source: Annex III of the unabridged version of the paper, tables 1 and 3; data compiled from returns submitted by donors to the Development Centre.

Note: The donors listed have together given some US\$115 million to Asia over the decade, out of a total of US\$135 million. The major exclusion from this table is UNICEF (US\$14.5 million) for which no breakdown is available.

Table 5. Function distribution of foreign assistance:
selected family planning programmes

Functional activity	India 1968/69 ^{a/}	Republic of Korea 1968	Malaysia 1969	Pakistan 1968/69	Turkey ^{b/} 1968
Training	23 68	09 99	17 47	06 94	07 84
Information and education	23 38	09 75		13 83	14 66
Contraceptive supplies	32 40	16 21	60 94	14 75	14 48
Research and evaluation	05 28	10 89	07 52	07 78	08 88
Operational activities	17 34	56 38	17 07	06 62	58 (c) 20 ^{c/}

Table 6. Spending supported by foreign aid, in selected national family planning programmes, (in percentages)

Category		India, 1961/62 - 1968/69	Pakistan, 1965/66 - 1967/68	Republic of Korea, 1964-1968
Direct	Salaries and allowances	-	-	2.1
	Contraceptive supplies	28.9	28.9	2.9
	Vehicles and equipment	24.5	25.3	47.3
	Training of field workers			10.4
	Other field expenses	-	-	2.2
Indirect	Administration	4.8	-	3.3
	Analysis and evaluation	21.1	17.4	3.8
	Publicity and education	-	-	6.8
	Research and training	19.3	28.4	19.7
	All other indirect costs	1.3	-	1.4
		100.0	100.0	100.0

Source: Robinson, *op. cit.*, p. 148.

ANNEX 1

Demography is defined here as including *data collection* by survey or census; *training* in demography and *research*, both in formal demography and in the relationship between demographic phenomena and socio-economic factors. *Family planning* is defined as including all costs related to carrying out a family planning programme. These costs include those for *family planning services*, both clinical and motivational, such as personnel, incentives, construction of clinics, and production of publicity material; *commodities*, covering both contraceptive supplies and other equipment; *training* in family planning and mass communications; *research*, excluding biomedical research, but including KAP studies and related research in the behavioural sciences. *Biomedical research* covers the physiology of human reproduction and the development of contraceptive techniques. The results of this research are of use to both developed and developing countries, and expenditure on it is not, strictly speaking, "aid". Furthermore, the Development Centre has no specialized knowledge in this field, which is WHO's province. The Centre's figures given here should therefore be used with reserve, and the data refer only to expenditure incurred by donors of aid for demography and family planning. For more detailed explanations of the categories used, see the full version of this paper.

ANNEX 2

Aid in local currency

A substantial part of the foreign aid for population activities is given in local currency. It is difficult to list this money separately as foreign aid, as most of it is absorbed directly into the government budget for a national family planning programme. All the aid to Asia in local currency recorded during the preparation of this paper has been from USAID, and seems to be primarily PL480. Some of the money has been provided in the form of loans, particularly before 1968, but subsequently as grants. The following table gives an approximate extent of funding of this kind to Asia during the 1960s (in the equivalent of million US dollars):

<u>Country</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>Total</u>
India	-	-	11.1 <u>a/</u>	7.9	19.0
Pakistan	2.1 <u>b/</u>	2.1 <u>b/</u>	4.2	9.6	18.0
Turkey	0.3	-	0.5	-	0.8
Total	2.4	2.1	15.8	17.5	37.8

a/ Only about 10 per cent of this grant was taken up during 1968 and 1969.

b/ Loan.

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